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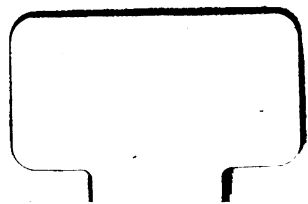
Massachusetts - Fire prevention commissioner^V
Annual report. Nos.2-5. 1915/16-1918/19.

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No. 107

SECOND ANNUAL REPORT

OF THE

FIRE PREVENTION COMMISSIONER

FOR THE METROPOLITAN DISTRICT,

MASSACHUSETTS.

FROM AUGUST 1, 1915, TO AUGUST 1, 1916.



BOSTON: •

WRIGHT & POTTER PRINTING CO., STATE PRINTERS,

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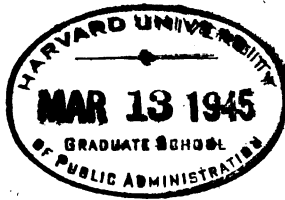
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The Commonwealth of Massachusetts.

TO HIS EXCELLENCY SAMUEL W. MCCALL, *Governor of the Commonwealth of Massachusetts.*

SIR:—The Fire Prevention Commissioner for the Metropolitan District herewith submits his second annual report.

• Very respectfully,

JOHN A. O'KEEFE,
*Fire Prevention Commissioner
for the Metropolitan District.*

FIRE PREVENTION COMMISSIONER FOR THE METROPOLITAN DISTRICT.

SECOND ANNUAL REPORT.

ALARMS AND LOSSES UNDER FIRE PREVENTION.

The Fire Prevention Commissioner for the Metropolitan District was appointed to office Sept. 16, 1914; the Deputy Commissioner was appointed October 21, and the Secretary, November 7. These three officials, with an office boy and six stenographers, constituted the entire working force of the department. The task assigned them was a new one in the Commonwealth of Massachusetts. The need of fire prevention had long been recognized, but the methods to be followed in realizing it could not be stated except in the most general terms. The entire plan of work had to be created, and then applied in twenty-six cities and towns, independent of one another, and possessing various forms of government and ordinance. Out of multiplicity must be brought uniformity; out of confusion, harmony. That was a task that could not be accomplished in a few weeks, or even in a few months. Yet it is of interest, and of some value, to consider changes in the number of fires and in the amount of fire losses throughout the district during the first year of fire prevention, that is, the year 1915.

In making a comparison of the number of fires in 1915 with any other year, it has seemed that the month of March should not be considered. March, 1915, was an exceptionally dry month; in fact, there was no measurable rainfall during the entire month. The result was that woods fires and other out-of-door fires necessitated constant alarms. Conditions became so bad that the Governor issued a proclamation extending the close season for game. In that one month the number of alarms throughout

the district was 3,389, while the normal number was about 800. Leaving out of consideration the month of March, the number of alarms of all kinds in the entire Metropolitan District for the year 1914 was 12,694; in the year 1915, the first year of fire prevention, the number of alarms was 9,933. During the part of 1916 that has passed, the decrease in the number of fires has continued. The following table gives the number of alarms in each city and town of the district during the month of June in the years 1914, 1915 and 1916:—

Number of Fire Alarms of All Kinds—Bell and Still—in Cities and Towns of the Metropolitan District for the Month of June in the Years 1914, 1915 and 1916.

	1914.	1915.	1916.
Arlington,	16	7	1
Belmont,	3	2	1
Boston,	580	423	285
Brookline,	31	29	14
Cambridge,	70	55	45
Chelsea,	44	34	27
Everett,	32	19	6
Lexington,	7	5	6
Lynn,	128	76	39
Malden,	40	28	28
Medford,	17	37	8
Melrose,	12	10	2
Milton,	12	7	7
Newton,	59	29	19
Quincy,	33	33	11
Reading,	11	1	5
Revere,	31	21	11
Rockland,	2	4	2
Saugus,	8	4	6
Somerville,	126	72	44
Stoneham,	7	1	2
Waltham,	18	12	9
Watertown,	9	10	6
Winchester,	17	5	3
Winthrop,	6	8	9
Woburn,	18	3	9
Total,	1,337	935	605

The decrease in the number of alarms thus far has been remarkable. If this decrease can be continued, even at a much lower rate, it will accomplish fire prevention.

The decrease in the fire loss throughout the district during 1915 was at a much lower rate. In comparing the fire loss, the month of March is not excluded.

In 1914 the fire loss throughout the district was \$4,671,295.94; in 1915 the fire loss was \$4,452,814.48. This was a decrease of \$218,481.46. In connection with this decrease, two facts should be remembered: in the first place, prior to 1915, the fire loss was increasing, and in the second place, the number of buildings and the population in the district are constantly increasing. The increase in the fire loss has been stayed, and the movement towards a decrease has been commenced. The figures are at hand for the fire loss in the cities and towns of the district outside Boston for the first four months of the present year. In those cities and towns the fire loss for the first four months of 1915 was \$958,400, and for the first four months of the present year, \$868,900. This indicates a progressive reduction. The comparison is not made with 1914 but with 1915, which itself showed a reduction from 1914.

It is perhaps natural that a campaign of education should at first show more marked results in a decrease of the number of fires than in a decrease of the fire loss. In most fires the loss is small; the greater part of the loss comes in a comparatively few fires. Those fires are in large establishments, or in congested value districts. They are reached not so much by a campaign of education as by improvements in fire departments, installation of sprinklers, removal of hazardous occupancies from congested value districts, and other similar measures that require more time for execution. Improvements are being constantly made in the fire departments of the district, many of them on the initiative of this department; hazardous occupancies are constantly being isolated or guarded; sprinklers are constantly being installed; and a more rapid decrease in the fire loss may be expected as these protective measures increase.

FACTORY FIRES.

Perhaps no class of fires is more disastrous in indirect consequences than factory fires. Not only is property, and in many instances life, destroyed in such fires, but the very means

of existence are taken from the families of workers. If the factory that is destroyed be a large one, hundreds of families suffer, and become dependent on the help of friends; if many factories be destroyed in a conflagration, as in Chelsea or Salem, perhaps thousands of families are exposed to privations of all kinds. The owner of the factory can look to his insurance, but the workman has no insurance on his wages. The distress falls on him with all its weight. If lives are lost they are usually the lives of wage earners. For these reasons the workman is especially and vitally interested in preventing factory fires. Smoking is the cause of many of these fires.

On pages 13 and 14 of the Fire Prevention Commissioner's first annual report is given an account of a conference held at the office of the Commissioner in December, 1914, with representatives of Central Labor Unions throughout the district. At this conference the question was discussed whether it would be wise for the Commissioner, in the exercise of the power conferred on him by section 13, subdivision J, of the Fire Prevention Act, to forbid smoking in factories. It was the unanimous opinion of the representatives of the Central Labor Unions that it would be unwise to do so; that it would drive smoking to cover, — to the out-of-the-way parts of the factories, where the danger would be increased. They recognized the evil of the practice, however, and advised that education and persuasion be used in the attempt to lessen it. The Commissioner was convinced of the wisdom of their advice. He abandoned the thought of correcting the evil by regulation, and instead, sent letters to all labor unions, distributed factory cards that called attention to the disastrous results of factory fires, and arranged for many addresses at labor meetings, either by himself or by others interested in the cause, in which were pictured the disastrous results of factory fires to the workers. In this campaign the Commissioner had the help and sympathy of employer and employee, for both were interested in the result at which he was aiming, and both approved the methods of work that he adopted.

It was reasonable to expect that the labor unions would give this work their hearty support. Labor unions are founded on the central principle that the pleasure and interests of the in-

dividual must yield to the pleasure and interests of all. They cannot but condemn the man who, for the pleasure of a smoke in working hours or in any hours within a factory, endangers the comfort and even the lives of fellow workers, or of the wives and children of fellow workers. As a matter of fact, the labor unions have given the work their hearty support.

The work commenced in December, 1914. In order to judge whether or not it was effective, the Commissioner has caused to be compiled the number of factory fires in the five months from January to June 1, 1915, and 1916. In these months in 1915 there were 113 factory fires throughout the Metropolitan District; in the same months in 1916 the number of such fires throughout the same district was 63. This is a reduction of 44 per cent., and the Commissioner considers it a justification of the methods followed. This reduction of 44 per cent. in factory fires during the months mentioned has been coincident with a very marked increase in the number of factories, and in the extent to which they have been used. The same methods will be pursued in the future.

FIRE DEPARTMENTS.

The Commissioner has endeavored to keep in touch with conditions in the different fire departments, and where improvement was urgent he has used his influence to obtain such improvements. Special investigations of fire department conditions were conducted in Cambridge, Milton, Saugus and Woburn, and recommendations were made to the governing bodies of those municipalities. In Woburn a very complete reorganization of the fire department has been effected, and the apparatus has been increased, through the energetic, intelligent work of Mayor Johnson, Chief Tracy and Acting Chief Buchanan. In that city new motor apparatus has been added, the number of fire stations has been reduced, the number of call men has been reduced, and the permanent men have been increased.

Throughout the district the motorization of apparatus has gone on rapidly, and fire houses are being reconstructed to adapt them to the housing of motor vehicles. In the fire de-

partment of the city of Lynn at present there is no horse-drawn vehicle. The number of permanent men in the different departments is being increased; and special attention is being given to the placing and maintenance of hydrants.

In the main, the twenty-six cities and towns of the district constitute one large area of contiguous populations, so that a person would not recognize that he was passing from one city or town to another. Under such conditions it is advantageous for the heads of the various fire departments to establish systems of reciprocal services, so that the firemen of one city shall respond to alarms on certain adjacent boxes in adjoining cities. Such systems have been largely established and are working well. They furnish to the communities that possess them a greatly increased security from fire loss, with no increased expense.

These systems of reciprocal services are based on voluntary agreements by the heads of the fire departments; are the results of actual, practical needs; and are an attempt to remedy the defects of the present system of independent departments in the different municipalities. The interests of the cities and towns in the Metropolitan District, in the prevention and extinguishing of fires, are very largely identical. The cities and towns are separated by artificial boundaries, yet in adjacent cities and towns fire apparatus and fire stations are duplicated, and marked differences exist in the nature and maintenance of the apparatus and fire houses, and in the discipline and pay of the firemen. In short, in adjacent cities or towns the most diverse policies may control the fire departments. All this is not conducive to efficiency. In the opinion of the Fire Prevention Commissioner the development of the Metropolitan District has reached a point where a Metropolitan fire department is absolutely demanded. Such action would in no sense be revolutionary. It would simply present on a larger scale the change that recently took place when Hyde Park was annexed to Boston.

AUTOMATIC SPRINKLERS.

There is no more effective method of preventing the destruction of life or property by fire than the installation of automatic sprinklers. The initial cost is sometimes considerable,

but the decrease in insurance rates will usually reimburse the owner in from three to ten years. In addition to that, factories and business blocks that are equipped with automatic sprinklers are more attractive to purchasers or to tenants than factories or blocks not so equipped. Last fall a Lynn business man, rather against his wishes, put automatic sprinklers in his block. Recently he said to the Commissioner that he wished some one had made him do this years ago. It had reduced his insurance rate from \$34 to \$17 on each thousand dollars of insurance. Again, last year a large wooden carriage factory in South Boston was equipped with sprinklers on the initiative of the Commissioner. In January of the present year, a fire broke out in that factory, and was held by the sprinklers to a trifling loss. After the fire the owner stated it as his belief that without the sprinklers he would have lost his entire plant. Instances like these have been numerous.

The fire prevention statute recognized the value of automatic sprinklers, and provided for their installation in sections 10, 11 and 12. Those sections are as follows: —

SECTION 10. Any building within the metropolitan district used in whole or in part for the business of woodworking, or for the business of manufacturing or working upon wooden, basket, rattan or cane goods or articles, or tow, shavings, excelsior, oakum, rope, twine, string, thread, bagging, paper, paper stock, cardboard, rags, cotton or linen, or cotton or linen garments or goods, or rubber, feathers, paint, grease, soap, oil, varnish, petroleum, gasoline, kerosene, benzine, naphtha, or other inflammable fluids, and any building in the metropolitan district used in whole or in part for the business of keeping or storing any of such goods or articles, except in such small quantities as are usual for domestic use, or for use in connection with and as incident to some business other than such keeping or storing, shall, upon the order of the commissioner, be equipped with automatic sprinklers: *provided, however*, that no such order shall apply to any building unless four or more persons live or are usually employed therein above the second floor.

SECTION 11. The basements of any buildings within the limits of the metropolitan district shall, upon notice in writing by the commissioner to the owners of the buildings, be equipped with such dry pipes with outside connections as the commission may prescribe.

SECTION 12. Owners of buildings in the metropolitan district who, within six months after having received written notice from the commissioner under sections ten or eleven, fail to comply with the require-

ment of such notice, shall be punished by a fine of not more than one thousand dollars.

It will be noticed that these sections make the authority to install sprinklers dependent on two conditions: first, the maintenance in the building of a hazardous, or a semihazardous occupancy; and second, the usual presence above the second floor of at least four persons. No matter how hazardous the business may be, unless four persons live or are usually employed above the second floor, under these sections automatic sprinklers cannot be ordered. No matter how high the building may be, or how many people may live or be employed above the second floor, unless there be a hazardous occupancy in the building, under these sections, automatic sprinklers cannot be ordered. Sprinklers cannot be ordered in buildings not above two stories, nor in lumber sheds, coal sheds, freight sheds, boat builders' sheds, car barns or many similar buildings even though the fire hazard be very great. Last year the officials of the city of Cambridge called the attention of the Fire Prevention Commissioner to conditions existing in coal and wood yards in the district between Main and Cambridge streets. All recognized the imminent hazard, but the Commissioner was without authority to guard against it. A few weeks later a disastrous conflagration destroyed one of these coal yards.

The Fire Prevention Commissioner, in administering the sprinkler sections of the statute, has no inspectors of his own on whom he can depend to call his attention to buildings in need of sprinkler protection. For that service he depends on the local officials, the fire departments, the building departments or the health departments. By one of these departments a report is made to him, stating the main facts that constitute the hazard of the building, and recommending sprinklers. The owner is then notified, and requested to call at the office of the Fire Prevention Commissioner. If he admit the need of sprinklers an order is issued at once; if he deny the need of sprinklers he is required to state his objections. These are then carefully examined, perhaps sent to the local officials who made the report, and perhaps made the basis

for a reinspection. The financial condition of the owner, the number of other similar obligations he may be under, the convenience of business carried on in the building are all considered. Sometimes, if the owner persist in his objections, a final inspection is made by the Commissioner or the Deputy Commissioner. Everything is done to eliminate injustice or a foolish expenditure of money. Finally, if the recommendation appear sound, an order for sprinklers is issued. Compliance with the order is required by law within six months, under a maximum penalty of \$1,000. It has not yet been found necessary to summon any owner into court; this may be due to the fact that so much care is exercised in deciding what buildings should be sprinklered.

Frequently, after an order for sprinklers has been issued, the owner will so improve the conditions in the building by removing hazardous occupancies, or by fireproofing, or by installing an automatic alarm, that the need for sprinklers is lessened or ended, and in such cases the order is modified or revoked. It has been stated that no owner has been called into court for refusing to obey a sprinkler order; it should also be stated that though it is common for owners to be represented by attorneys, yet no order of the Commissioner has been carried to the courts by the owner.

From June 1, 1915, to July 1, 1916, 219 sprinkler orders were issued by the Commissioner. Of these, 130 were for sprinklers throughout the building, 42 for sprinklers in the basement alone, 19 for sprinklers in the basement and first floor, and 28 were for sprinklers on various other floors. Twenty-one orders were modified or revoked for the reasons stated above.

The installation of sprinklers tends to reduce the insurance rates on a building; it also lessens the exposure hazard of adjoining buildings, and to that extent tends to reduce the insurance rates on adjoining buildings. It has been suggested by prominent real estate owners that it would be wise to sprinkler entire blocks in the congested sections of the city, in order that the security afforded each building might react to the advantage of its neighbors. It has seemed to the Commissioner that there was merit in this suggestion, and that it

might well be adopted, at the same time giving attention to isolated buildings where the fire hazard was great.

One practical limitation on the Commissioner in ordering sprinklers is the condition of the street on which the building stands. If the street has been newly paved the Commissioner feels that he should not cause it to be opened, except in cases of extreme urgency. An attempt has been made to meet this difficulty by sending to the Commissioner some weeks in advance a list of streets to be paved, in order that he may determine what work is to be done before the pavement is laid. That plan has sometimes failed for the reason that the examination of the list of streets required months of work by the inspectors of the fire department.

Similar to the sprinkling of entire blocks is the attempt of the Commissioner to install basement sprinklers in the entire business section of the city of Lynn around Central Square. Such a course would largely insure the heart of the city against a conflagration, and would soon result in a general lowering of insurance rates for that district.

REMOVAL OF HAZARDOUS OCCUPANCIES.

A third method of guarding against large fire loss is the removal of hazardous occupancies from congested value, or congested population, districts. Carpenter shops, paint shops, excelsior factories or warehouses, or other similar kinds of business in the neighborhood of large buildings stored with valuable merchandise, or in the neighborhood of large apartment houses or tenement blocks, largely increase the danger of loss of life or property by fire. It has been the policy of the Commissioner — a policy in which he has had the splendid, courageous support of John Grady, Fire Commissioner of Boston — to remove or at least lessen this danger. At times the policy may have seemed to work a hardship on the tenant or the owner, but it has plainly been in the interest of the public safety. One application of this policy has been the removal of blacksmith shops from tenement houses.

These three lines of work — the improvements of the fire departments, the installation of sprinklers, and the removal of

hazardous occupancies from congested value, or congested population districts — may be expected gradually to cut down the losses, as the campaign of education has cut down the alarms.

BLOWER SYSTEMS.

Blower systems that are used for the conveyance of stock or refuse have introduced into factories an additional fire hazard. In woodworking establishments they carry off the sawdust; in shoe factories, the leather dust; and in other factories, various kinds of refuse. The fine combustible material carried in the ducts, the rapidly moving air, and the manner in which a blower system branches into all parts of a factory make possible the rapid spread of fire once it has started. The spread of the fire is further facilitated by the coating that the dust forms on the inside of the duct. Fires from this cause are rapidly growing more frequent, with the increased use of blower systems. Such a fire may start in several ways. A man who is working at a machine that feeds into such a system may toss a partly consumed cigarette into it; particles of red-hot iron or emery dust carried into it may ignite the combustible dust; over-heated bearings that are improperly installed may set the dust afire; or even static electricity from the belt may ignite readily inflammable material that is allowed to accumulate near ducts. These fires are due to improper construction or improper maintenance of the blower systems. Other States regulate by law the construction or maintenance of blowers; Massachusetts does not. It is highly desirable as a precaution against factory fires that legislation should be enacted giving to some department authority to make rules for the construction and maintenance of blower systems. Such authority might be given to the Fire Prevention Commissioner in an additional subdivision under section 13 of chapter 795 of the Acts of 1914.

A fire of this character occurred at 21 Wormwood Street, South Boston, recently. The following letter in reply to an inquiry by the Fire Prevention Commissioner is interesting in that it states clearly the concrete particulars of the fire: —

Yours of February 2 at hand in regard to the fire which recently occurred in the blower used by — Company, in the factory buildings,

21 Wormwood Street, South Boston, Mass., and in reply I would say that the dust spoken of in your letter comes from the grinding off of surplus leather and linings, together with tack heads which hold the same in place preparatory to applying the sole of the shoe. This grinding or smoothing is done on a machine called a "pounder," which is like a circular rasp and revolves very rapidly. The sparks are caused by grinding off the tacks. It is impossible to separate the tack dust from the leather dust at the machine.

Mr. — of the — Company says the apparatus they are now installing, consisting of a large blower and cyclone dust collector, will do away with the possibility of a fire in the future. The apparatus is guaranteed by the — Company, and is used by the largest shoe manufacturers. The connections between the machine and cyclone collector which they are now installing are short and direct; also the dust drops from the collector into the metal cans which are to be emptied twice a day, noon and night. The principal cause of the fire on January 27 was due to there being too many machines on one dust collector or blower; also to the long run of horizontal pipe which became plugged, and stopped any circulation.

This letter describes a condition of things that would be impossible under proper regulations; and then it shows how a few simple precautions will result in making impossible a similar fire. In the interest of the public safety, blowers should be regulated.

FACTORY FIRE DRILLS.

If a fire occur in a factory the one all-important thing is to get the operatives out as speedily as possible. At such a time, order, speed and the knowledge of what to do are of prime importance. These conditions can be expected only when operatives are to some extent familiar with the course that should be taken in case of a fire, and that knowledge is obtained only from factory fire drills. In New York City, and in other places, such drills are required by law. Usually in the lead, in industrial legislation, in this matter, Massachusetts is behind other States.

In many workshops the operatives are on the fourth, fifth or sixth floor; the floor space is crowded with shoe racks, benches and countless other things; the approach to the fire escape, through a window, is blocked by a bench, a table or perhaps a machine; the operatives may never have been told where the

fire escape is; there may be more than one stairway, but they have been accustomed to use a particular one; no one is in command to direct their exit from the burning building. These are actual conditions, and it can readily be seen that they are conditions that might lead to disastrous results. Fortunately, we have had few factory fires that have resulted in loss of life; but in factory fires as in school fires it is the exceptional against which we must guard.

Factory drills will familiarize the operatives with the things that should be done in case of an actual fire; moreover, they will disclose and cause to be corrected the negligence of some employers in crowding factory floors, blocking passages to fire escapes, and permitting other conditions that confuse or retard the exit of the operatives. Legislation should be enacted requiring fire drills in workshops above the second floor, and containing above a stated number of operatives.

Already in Boston some industrial establishments have recognized the need of fire drills, and have voluntarily adopted them. The operatives are organized with leaders on each floor; specific duties in the matter of opening exits and using portable extinguishers are assigned to certain persons; and every one is instructed in the course to be followed when the fire signal strikes. After that, occasionally, the signal is given at times that will least interfere with the business of the establishment. The Fire Prevention Department is ready, on request, to organize fire drills in shops or factories.

DWELLING HOUSE FIRES.

By far the larger part of the fires in the Metropolitan District break out in dwelling houses. It is a difficult class of fires to reach successfully. They are due largely to ignorance or negligence on the part of the person in charge of the house. Regulations made to prevent them could not be enforced. It appears to be a field where the hope of fire prevention depends on education.

In the city of Lynn in 1915 there were 28 factory fires, 17 store fires and 173 dwelling house fires. At the beginning of the year the Commissioner commenced special work to reach dwelling house fires in Lynn. (1) He asked the municipal coun-

cil to enact an ordinance requiring the inspection of the heating plant in every apartment house, lodging house or tenement house during the months of September and October each year. Such an inspection would disclose the defective furnaces, heat pipes and chimneys that cause many fires during the early part of the winter. (2) He prepared a leaflet of four pages dealing in a simple manner with the different kinds of dwelling house fires, and caused it to be distributed to all school children. (3) Inasmuch as most dwelling house fires arise from conditions under the control of women, it seemed that some effort should be made to educate the women of the city in the common causes of dwelling house fires. The most effective way seemed to be by short addresses to clubs and societies of all kinds, composed wholly or in part of women. Many business and professional men of the city volunteered to make these addresses, the arrangements being all perfected in the office of the Commissioner. The newspapers of the city announced each address, and usually gave its substance the following day. This plan was followed through the months of January, February and March. It was such as might naturally be expected to decrease dwelling house fires. Whether as a consequence of this work or not, dwelling house fires did decrease in Lynn, in a marked degree, during the first part of the present year. In the first five months of 1915 there were 93 such fires in that city; in the first five months of the present year the number fell to 46. It should be added that the leaflet distributed in the Lynn schools was distributed in all schools throughout the district.

An effort will be made during the coming fall to have cities and towns adopt some form of ordinance requiring an annual inspection of heating plants in dwelling houses of the classes mentioned above. In such buildings fires are frequently disastrous, and their source is usually in the basement.

FIRE PROTECTION IN STABLES FOR HORSES.

On Dec. 27, 1915, a fire occurred in a Lynn stable, in which 49 horses were destroyed. The insurance on them was about \$15,000. The stable was practically a two-story building, 225

feet long, with the horses on the second floor. At one end of the building the second story was on a level with the yard, and the only exit was at this end. If there had been an exit at the other end most of the horses could have been saved. In conjunction with Dr. Rowley of the Society for the Prevention of Cruelty to Animals the Commissioner petitioned the Legislature for legislation that would protect horses stabled above the first floor. The following measure was enacted:—

CHAPTER 158, GENERAL ACTS OF 1916.

AN ACT TO REQUIRE FIRE PROTECTION IN STABLES FOR HORSES AND MULES.

Be it enacted, etc., as follows:

SECTION 1. No horse or mule shall be stabled on the second or any higher floor of any building unless there are two means of exit therefrom, at opposite ends of the building, to the main or street floor.

SECTION 2. This act shall not apply to stables equipped with an automatic sprinkler system.

SECTION 3. Any violation of this act shall be punished by a fine of not more than two hundred dollars.

SECTION 4. This act shall take effect on the first day of January, in the year nineteen hundred and seventeen. [*Approved April 26, 1916.*]

INFLAMMABLE FLUIDS.

Sale of Gasoline in Boston Harbor.

In Boston Harbor are very many boats propelled by gasoline engines, and used for pleasure or in the off-shore fisheries. Prior to 1911 these boats took on gasoline without restriction at any point along the water front. This practice created a very great fire hazard. In 1911 the department having jurisdiction, established regulations forbidding the delivery of gasoline to power boats along the water front, and requiring that it should be purchased from gasoline vessels stationed in the harbor, at some location assigned by the harbor master. These gasoline vessels were licensed under these regulations. They obtained their gasoline and kerosene by means of supply boats that were supplied at certain points on the water front. Gradually, enforcement of the regulations ceased, and when the Fire Prevention Commissioner took office, gasoline was being sold

and delivered quite freely from the wharves. He re-established, with some changes, the regulations on Jan. 1, 1915, and they are being well observed by the owners of supply boats.

These gasoline vessels are located a safe distance off Fish Pier; two are located off East Boston, and two others in Cow Pasture Bay. With one or two exceptions the gasoline vessels are old hulks. The regulations define the manner in which they shall be anchored and maintained; the license limits the amount of gasoline and kerosene that shall be carried. Thus the regulations for the sale of gasoline in Metropolitan waters have very largely removed the danger of gasoline fires at the wharves. In the main, the owners of gasoline boats have lived up to the regulations.

This system for delivering gasoline to power boats is a great improvement on the old system of indiscriminate sale at the wharves, but there are objections to the present system, — the gasoline vessels are not attractive objects; they may to some extent interfere with navigation; and there is the remote danger that in a storm, or as the result of collision, the gasoline may flow over the water. A more desirable plan would be to build a cement station at some proper point on the shore of the harbor, and require gasoline to be purchased at that station. Such a station might be constructed so that sections could be leased to companies or individuals desiring to engage in the business, or the entire location might be leased to one concern, — perhaps, if public policy did not prohibit, to the concern that would pay the highest rental. Such a system would be safer, and would be more in keeping with the proper management of a great harbor. The concerns that are licensed to sell gasoline in Boston Harbor would like some such arrangement. The Fire Prevention Commissioner brought the matter to the attention of the Directors of the Port of Boston. That Board recognized the need of a change, but did not see its way clear to erect the station desired. The matter is still under consideration, and its solution may require action by the Legislature.

When the regulations governing the sale of gasoline in harbors were prepared, it was assumed that the authority of the Commissioner extended only to the sellers of gasoline; as a

result, those regulations made no attempt to improve conditions on the power boats.

On Feb. 26, 1915, the power boat "Mary C. Santos" commenced to take on gasoline from the "Smith Tuttle," one of the licensed gasoline boats. Suddenly there was an explosion that seemed to originate below the deck of the "Santos." The explosion lifted the deck of the "Santos," caused the schooner to sink; and destroyed the lives of three men. The gasoline boat was only slightly damaged. An investigation conducted by the Boston Fire Commissioner at the request of the Fire Prevention Commissioner made it clear that the tragedy was due to poor conditions on the power boat. The Fire Prevention Commissioner called a conference to which were invited representatives of the oil companies, the harbor master, and Deputy Chief Taber of the Boston Fire Department. It was agreed that the explosion on the "Santos" was due to an accumulation of gasoline vapors in the hold that had been set off by a light or fire in the hold. The harbor master and Deputy Chief Taber were appointed a committee to suggest new regulations, for the vessels selling gasoline, that would prevent explosions like that on the "Santos." The following regulations were suggested by them, approved by the oil experts, and established by the Commissioner: —

(a) All motor vessels having gasoline tanks below deck shall have a filler pipe connected directly with the tank, the upper end of which shall be flush with the deck, connected with a deck plate, and fitted with a screw cap.

(b) All motor vessels, while taking gasoline into their tanks, shall have all lights extinguished, and all hatchways, companionways, skylights and windows closed.

It is now the duty of the gasoline vessels, before delivering gasoline to a power boat, to see that it is in conformity with these regulations.

Since the tragedy on the "Mary C. Santos" the Attorney-General has stated as his opinion that "the provisions of law vest in the Fire Prevention Commissioner authority to make reasonable regulations governing the use of gasoline within the Metropolitan Fire Prevention District, whether the use of the

gasoline is upon land or upon water." That opinion will enable the Fire Prevention Commissioner to require reasonably safe conditions on power boats that are within his district.

Anchorage of Gasoline Boats.

In another way the use of gasoline creates danger in Boston Harbor. Recently the Fire Commissioner of Boston made the following report to the Fire Prevention Commissioner:—

I respectfully report that a condition exists in the vicinity of Commercial Wharf which constitutes an absolute hazard to life and property.

Located at what is known as the Eastern Packet Wharf are moored during the day and night hundreds of motor boats, containing all the way from 50 to 2,000 gallons of gasoline. These boats are owned and used mainly by fishermen who are very careless in matters pertaining to smoking, cooking, etc., around the boats. Surrounding this wharf are freight, mercantile and manufacturing houses, which are exposed to considerable danger. Recent fires on several of these boats, and especially on August 21, when a life was lost on a boat owned by John Hogan which contained about 1,000 gallons of gasoline, have made it necessary to make an investigation, from which it has been learned that the amount of gasoline carried in these boats at this location makes it one of the worst hazards along the water front.

The fire of August 21, which the report mentions, was caused by dropping a match into a gasoline tank. The danger is that in so great an assemblage of gasoline boats the fire may become general, or may, under favoring conditions, extend to the buildings along the water front. The condition described is not peculiar, except in extent, to the vicinity of Commercial Wharf. To a less extent it exists near all the bridges, and here and there along the water front. Again, the Directors of the Port and the harbor master were consulted, and it was their unanimous opinion that the gasoline boats now anchored near Commercial Wharf should be anchored in some less hazardous locality, and the basin just beyond the Fish Pier was suggested. The matter is now under consideration.

Transportation of Gasoline through Boston.

1. In the light of accidents that had happened, and after conferences with railroad officials, it was considered necessary to incorporate the following sections in the gasoline regulations.

17. No vehicle engaged in the business of transporting any volatile inflammable fluid over a public way in any city or town of said district, in quantity exceeding 25 gallons, shall approach nearer than 3 feet to any rail of a street railway, unless it become necessary to do so for the purpose of passing another vehicle or an obstruction, or for the purpose of avoiding an accident, or on account of insufficient space in the street. Before approaching nearer to said rail the person in charge of the vehicle shall look towards the rear, and hold out his arm so that it may be plainly seen by persons in charge of vehicles behind him that he intends to turn from the path in which he is proceeding.

18. At cross streets no vehicle transporting volatile inflammable fluids, in the quantity above mentioned, shall enter upon car tracks until it has been brought to a full stop, and until the person in charge of said vehicle has satisfied himself that it is safe to enter upon said tracks. This shall not apply to any automobile or motor truck that is not engaged in the business of transporting volatile inflammable fluids.

2. During the holiday season of 1915-16 arrangements were made with the oil companies not to send gasoline wagons through the congested streets of Boston during the hours when the congestion existed. The oil companies kept the agreement faithfully, with the same fine regard for the public welfare that they have manifested in all their dealings with the Fire Prevention Commissioner.

3. Early last March, in the city of Detroit, a railroad tank car containing gasoline began to leak, and the gasoline flowed into the sewer. The result was a terrible explosion that destroyed a large amount of property, and hazarded life. The Fire Prevention Commissioner sent accounts of this accident to heads of fire departments, with directions for handling a leaking gasoline car. In response to his letter he received from the Fire Commissioner of Boston a communication calling his attention to the transportation of gasoline in freight cars over Atlantic Avenue, and containing this sentence: —

You are doubtless familiar with the means of transporting freight along Atlantic Avenue, between the North and South terminals. This freight transfer road crosses subways, tunnels and sewers in abundance; and an accident from leakage of gasoline, or casing head gasoline, in the vicinity of Dewey Square or State Street, might cause tremendous loss of life or property.

The warning seemed a wise one, and the Fire Prevention Commissioner at once took the matter up with the railroads and shippers. Without the necessity of issuing an order, arrangements have been made so that no more gasoline cars shall be transported over Atlantic Avenue except in case of necessity, with the special permit of the Commissioner, and under the supervision of the Fire Department.

EFFECT OF GASOLINE REGULATIONS.

Prior to 1914 the sale and use of gasoline and other volatile inflammable fluids was subject to very slight control in the Metropolitan District. Large tanks of gasoline were installed without permission and without supervision, and gasoline was kept in homes, stores, shops and factories in common kerosene cans, or even in glass bottles. The result was many gasoline fires. In May, 1914, the District Police established an excellent code of regulations. In the fall the Fire Prevention Commissioner adopted these regulations with such changes as experience showed to be necessary or the convenience of business required. Restriction is always distasteful, and complaints were heard of the attempt to guard the use of these dangerous fluids. The results would seem to prove the wisdom of the regulations. The number of gasoline fires throughout the Metropolitan District in 1914 was 104; in 1915 the number fell to 46.

CONSTRUCTION OF GARAGES.

In the construction of garages an attempt has been made to modify previous regulations, as far as reasonable safety would permit, for the purpose of conveniencing the public. Small private garages carry but little hazard. Under previous regulations, if made of wood, they must be situated at least 20 feet from the nearest wooden building; under present regulations

that distance is made 12 feet. Under previous regulations a license was needed for such garages; under present regulations, in the case of garages intended for not over two cars, if the Building Inspector certifies that the building conforms with the regulations of the Fire Prevention Commissioner, no more is required. It is the policy of the Fire Prevention Commissioner in the light of experience to modify gasoline regulations and all other regulations as rapidly as a regard for public safety will permit for the convenience of the public.

In the case of large public garages the conditions are altogether different. On account of the number of persons frequenting the garage, and the number of cars stored there, the hazard is very much increased. Within the fire limits the regulations require an absolutely first-class building in which there shall be no wooden construction. In thickly populated districts, even outside the fire limits, the Commissioner has favored insistence on the same kind of a building. A result of this is that public garages in the Metropolitan District to-day illustrate the very safest form of construction.

FUEL OIL.

The rapid development in the use of fuel oil as a substitute for coal in heating and power plants has made it necessary for the Commissioner to consider and determine under what restrictions it should be stored and used. At the present time there is pending a petition for permission to store 30,000 gallons under a high office building in Boston.

It has been necessary to consider not alone the restrictions under which fuel oil should be stored and used, but also petitions for the establishment of plants for distributing it. Its use is being introduced into the textile mills, and that would seem to necessitate that Lowell, Lawrence and other cities should be supplied from Boston. In 1915 the Mexican Petroleum Corporation sought permission to establish a large fuel oil plant in the city of Chelsea, on twenty acres of marsh land fronting on Chelsea Creek. Their plan was to erect at this place tanks for about 400,000 barrels of oil, which would be brought to Boston by water. From this plant the oil would be distributed throughout New England. With proper safe-

guards such a plant could be erected and maintained without hazard to the city of Chelsea. The mayor and the Chief of the Fire Department favored it. The Commissioner was in doubt, however, whether it would be wise to burden the upper and narrower parts of Boston Harbor with another fleet of oil vessels. The route of the vessels lay across the courses of two lines of ferryboats, and under three bridges. The matter seemed a broad and important one, on which expert opinion should be sought. The Commissioner invited the following officials to attend a conference: Councillors Hagan, Attridge and Ballantyne of the Boston City Council; Fire Commissioner Grady; Messrs. Cram and Walsh of the Boston City Planning Board; John N. Cole of the Industrial Development Board; Harbor Master Perry; Mr. Joslin, representing the Chamber of Commerce; and Edward F. McSweeney, chairman of the Directors of the Port of Boston. Fortunately, all these gentlemen were able to be present. Two questions were presented for their consideration: first, whether the petition of the Mexican Petroleum Corporation involved any special hazard to Boston Harbor; second, what locations in the Metropolitan District would be considered most desirable for future oil plants. Both these questions were discussed at length. On the first, it was the unanimous opinion of the conference that the establishment of the Mexican Petroleum Corporation's plant involves no special hazard to Boston Harbor, if the plant were provided with modern safeguards. The opinion was also freely expressed that in considering such petitions the Commissioner should be careful not to permit a striving for conditions of academic perfection to drive away important lines of business from Boston Harbor and the Metropolitan District. In answer to the second question it was agreed that the shores of the Neponset River on the south, and the shores of the Saugus River on the north, afforded unobjectionable sites for such plants. If a location nearer the heart of the district were sought, it was suggested that such a location might be found on the shores of the Mystic River in Somerville.

The Commissioner granted the petition of the Mexican Petroleum Corporation. A copy of the license and of the restrictions under which it was granted follows:—

Whereas, On the third day of May, A.D. 1915, the Mexican Petroleum Corporation petitioned the Board of Mayor and Aldermen of the City of Chelsea, situated within the Metropolitan Fire Prevention District of said Commonwealth, for a license to use a tract of land in said Chelsea, containing about twenty-two acres, and bounded westerly by Eastern Avenue, northerly by land now or formerly of Gerry *et al.*, northeasterly, easterly and southerly by Chelsea Creek, southerly again by lands of the Boston & Albany Railroad Company, and of the Commonwealth of Massachusetts, for the purpose of erecting thereon suitable tanks and structures for storing, treating and distributing petroleum and its various products;

And whereas, On the twenty-ninth day of November, A.D. 1915, the said Board of Mayor and Aldermen, acting under authority of the Fire Prevention Commissioner for said district, did, by vote, give the said petitioner leave to withdraw on its said petition;

And whereas thereafter, The said petitioner appealed from said act of the said Board of Mayor and Aldermen to the said Fire Prevention Commissioner:

I, John A. O'Keefe, duly appointed and qualified Fire Prevention Commissioner for the said District, by virtue of the authority conferred on me by law, do hereby grant to the said Mexican Petroleum Corporation, as far as in my power lies, the right to use said premises for the purpose of constructing thereon suitable tanks and other structures for storing, treating and distributing petroleum and its various products, for the term of one year. The right to use said premises as above set forth shall be exercised in the manner indicated on the plan marked "A," hereto appended, and in accordance with the conditions, restrictions and limitations contained in a certain memorandum marked "B," also hereto appended, except in so far as slight deviations from said plan and memorandum may be sanctioned by the Fire Prevention Commissioner. The said plan and memorandum are hereby made parts of this license.

JOHN A. O'KEEFE,

Fire Prevention Commissioner for the Metropolitan District.

MAY 10, 1916.

B.

MEMORANDUM.

Conditions, Restrictions and Limitations governing the Construction and Maintenance of a Plant in Chelsea Creek, in the City of Chelsea, for the Storage, Treatment and Distribution of Petroleum and its Various Products, under a License granted to the Mexican Petroleum Corporation by the Fire Prevention Commissioner, May 10, A.D. 1916.

1. During the year for which this license is granted, no refining of petroleum shall be carried on in said plant.

2. The size and location of tanks to be erected shall be in accordance with the plan herewith filed, marked "A," except as provided in the license.

3. The tank marked "Tank No. 1," on said plan, shall alone be used for the storage of naphtha or gasoline; all other tanks shall be used for the storage of fuel oil, with a flash point higher than 150° F.

4. Each tank shall be surrounded with a circular embankment of reinforced concrete, not less than 4 feet in height, and having a capacity not less than 5 per cent. greater than the tank to be protected.

5. In matters for which provision is not specifically made in this license and memorandum, the tanks shall conform in material and construction with the requirements of the National Board of Fire Underwriters.

6. Valves shall be installed in the pipes leading to and from said tanks, in a manner satisfactory to the Fire Prevention Commissioner.

7. Tanks shall be filled only by pipes entering over the top.

8. Manhole covers on the tops of the tanks shall be kept closed only by the weight of the cover.

9. Each tank shall be protected with the "Foam Extinguisher" system, constructed in a manner satisfactory to the Fire Prevention Commissioner.

10. The bulkhead, and any piers that may be constructed, shall be constructed with substantial piles and heavy planking, approved by the Fire Prevention Commissioner, and shall be covered with cement concrete not less than 3 inches in thickness.

11. All buildings erected on said premises shall be of first-class construction.

12. A substantial fence, of incombustible material, shall be built around said premises except on the water front.

13. No oil shall be kept or stored on said premises in cans, barrels, drums, or other similar containers, except for convenience in supplying the automobiles of the company.

These restrictions, and the plan filed with the city clerk of Chelsea, will prevent the development of the business along channels that may increase the fire hazard. An extension of the rights granted in this license can be obtained from time to time only by consent of the city government of Chelsea, or the Fire Prevention Commissioner, in the same manner in which the original license was obtained.

FIRE CONDITIONS IN SCHOOLHOUSES.

The Fire Prevention Commissioner has no control over the construction of schoolhouses. However dangerous the structural conditions may be, he has no authority to order changes. This is quite proper. In the interest of unity and simplicity

of administration, all authority to supervise the erection of new buildings, or to order changes in existing buildings, is vested in the District Police, except so far as authority is vested in local building commissioners or building inspectors. This prevents evasion of responsibility, and all the credit for safely constructed buildings, as well as all the discredit for unsafely constructed buildings, can be definitely placed. If the Fire Prevention Commissioner believes that structural conditions increase the likelihood of fire loss, he has endeavored to change them through the District Police or through local officials. But while the statute gives the Commissioner no authority over construction, yet it clearly makes it his duty to study construction, and if in his opinion circumstances require it, to advise officers of cities and towns, and to make suggestions to the General Court, looking to the improvement of laws, ordinances and by-laws relating to construction. His province in matters of construction, then, is advisory and not mandatory. Section 24 of the Fire Prevention Act (chapter 795 of the Acts of 1914) is as follows: —

It shall be the duty of the commissioner to study fire hazard and fire prevention and all matters relating thereto, to hear suggestions and complaints from all persons and from all cities and towns in the metropolitan district, to advise with the officers of such cities and towns, and from time to time to make suggestions to the general court and to the cities and towns looking to the improvement of the laws, ordinances, and by-laws relating to fire departments, construction of buildings, building or fire limits, use and occupation of buildings and other premises, protection of existing buildings, fire escapes and other life-saving devices, segregation and licensing of trades dangerous by reason of fire hazard, and all other matters relating to fire prevention and fire hazard.

In performance of the duties and obligations placed on him by this section, shortly after his appointment in the fall of 1914, the Commissioner called at the State House a conference of officials from cities and towns in the district to consider what action should be taken in the matter of wooden shingles. In further performance of those duties it seemed to him, in May, 1915, that he should conduct an investigation of the fire conditions existing in schoolhouses, public and private, throughout

the district. He had no inspectors to make this investigation for him; but section 4 of the Fire Prevention Act provided that he could delegate any inspection required under the act to the Head of the Fire Department, or to any other designated officer in any city or town in the Metropolitan District. It seemed best to the Commissioner to delegate that work to the person in charge of each school. A complete list of public and private schools in the district was compiled, and a report blank containing 51 questions was sent to the person in charge of each school. Those questions were framed to disclose the height and construction of the building; the fire escapes and stairways; the fire drills; the proximity to the building of fire hazards; and, above all, the construction of the basement, and the extent to which it was isolated from the building above. By July the reports had all been received, and they are to-day on file in the Commissioner's office. As far as appears, this was the first attempt made in the Commonwealth to tabulate schoolhouse structural conditions with a view to fire dangers. To the Commissioner's surprise the reports disclosed in Metropolitan schoolhouses the conditions that have since become generally known. Public and private schoolhouses were alike defective, and the dangerous conditions existed more or less in all cities and towns. Under section 24 of the Fire Prevention Act, quoted above, the Commissioner at once commenced to communicate with those in charge of private schools, and later with school committees, and to "advise with" them as required by law. As has been stated above, he properly had no authority to order the correction of conditions, but it was remarkable how frequently his suggestions were put into practice in private and public schools alike. He had been corresponding with the director of a large private school in the district, and the day before the Peabody fire he received from this director a letter from which the following is quoted:—

Our hall, I see, naturally suggests to you a fire hazard. Well, this hall is seldom used, and when used can be most easily emptied. There are two large exits about 8 feet wide leading from it.

On the same day the Commissioner answered as follows:—

There is a danger from the hall on the third floor. I note that it is not frequently used, but fires have a way of occurring at the most inopportune moments. As to the rest of the building, I am not certain from your letter whether the ceiling of the basement is wire lath and cement plaster; if it is, and the stairway is protected, that is splendid work.

Fires in school buildings are quite common; occasionally they end in tragedies, and I feel that we should do everything possible to render such tragedies as nearly impossible as human effort can. I am pleased to note that in this view you wholly agree with me, and that I have your earnest co-operation.

The Peabody schoolhouse fire occurred Oct. 28, 1915. Peabody is not in the Fire Prevention District, and accordingly there was no report in the Commissioner's office on this particular schoolhouse. It was at once apparent that the Peabody tragedy was due to structural conditions which the reports made to the Commissioner had shown to be general throughout his district. He was spurred to renewed work in the attempt to have them corrected.

The great Boston fire of 1872 occurred November 9. That date had been observed as Fire Prevention Day in 1914. In 1915 it seemed that the wisest and most profitable way to observe Fire Prevention Day would be by a conference of officials of the cities and towns in the Commonwealth, and of citizens distinguished in the various lines of work that had to do with schools and construction, who should consider the present conditions of Massachusetts schoolhouses, and recommend methods for safeguarding them. The calling and direction of such a conference appeared to be in a special manner the duty of the Fire Prevention Commissioner. For such a conference there could be no more fitting place than Faneuil Hall. The Governor gave the plan his hearty support. In the few days that were available invitations were prepared and sent to officials and private citizens whose assistance would be of service in the work that was to be done.

The conference was opened by Governor Walsh, with the following brief address: —

MR. O'KEEFE, LADIES AND GENTLEMEN: — I want to thank every one here for evincing this interest in a great public duty. The obligation

rests upon us all, and particularly upon the government, to prevent waste of property and destruction of human life. The vigilance, the foresight that are so necessary and so essential for the protection of life and of property from the invasions of a foreign foe are just as essential and just as important for the prevention of loss of property and of life from a foe within, and there is no more deadly foe to human life or to property than fire. Therefore, we do well as citizens to come together to see in what manner, and in what way, we can plan and we can devise methods and ways of preserving human life, and saving the property of our fellow citizens from loss and destruction through the waste by this deadly enemy to humanity and to human life, — namely, fire.

It is an evidence of public spirit that so many have come from various parts of the State to participate in this discussion, and by their presence to emphasize to the whole community the importance of this subject, and the necessity of every single community in the State being put to work to prevent every possible loss that may come in the future through fire to either property or to life. And I think our obligation is all the more serious when we come to the duty which we owe to protect the lives of the young children while performing the duties of preparing themselves for citizenship. The State requires attendance at school by its young for the purpose of inculcating into their lives the necessary knowledge and equipment essential for good citizenship. It insists that its children, who are to be the future citizens, the future statesmen, the future soldiers, the future mothers, shall know the history of our country, the history of other countries, and by comparison understand how much more valuable our institutions are, — to know the sacrifices which have been made for the establishment of the liberties which we enjoy here.

In forcing these young children into the schools for this work of preparing for citizenship, and also of preparing themselves to take advantage of the opportunities of life when they reach a more mature age, it seems to me we have a special obligation, because attendance at school isn't like attendance at an amusement, it is a requirement which the State places on all parents and on all children, and we ought, therefore, to see that these most precious of all our jewels — the children of to-day, the men and women of the future — should be guarded as we would guard the most valuable jewel that any one of us possesses, for they are the jewels of the State and of the nation. They are its most valuable assets, for from among them must come the citizens who are to solve the problems of the future, and who are to defend the liberties which we enjoy.

So our task to-day is an inspiring one, and I am very glad to find so many here, and to find the large number of public-spirited men, representing here the activities of the communities, who have prepared papers and who have expressed a willingness to participate in this discussion. I want to thank them in the name of all the people of the State, for the State is always grateful to public-spirited men who give of their efforts

and their lives to the solving of some of the problems of their fellow men. I am especially grateful to them for their willingness to help suggest a way and means of doing even more than we have to-day, and of impressing upon this whole community the tremendous importance of safeguarding and protecting in every possible way the lives of others, — the lives of our children.

I therefore wish this conference Godspeed and success, and I pray that the result of your deliberations may mean new efforts upon the part of our Commonwealth to do even more than it has ever done in the past to protect property, and safeguard and preserve the lives of our fellow citizens, especially of our children.

After the Governor's address the conference chose the Fire Prevention Commissioner chairman. Addresses on different phases of schoolhouse conditions and needs were then made by the following persons: —

David Snedden, State Commissioner of Education.
Frank Irving Cooper, associate architect for the Russell Sage Foundation.
Prof. C. B. Breed, Massachusetts Institute of Technology.
Gorham Dana, Manager of Underwriters' Bureau of New England.
Dr. Thomas L. Harrington, Director of Hygiene in Boston Schools.
R. Clipston Sturgis, architect, and former chairman of Boston Schoolhouse Commission.
Lyon Weyburn, Legislative Counsel for Boston Chamber of Commerce.

After the addresses and a discussion, it was voted to appoint a committee who should adopt measures to insure the safety of children in Massachusetts schools. That committee, known as the Faneuil Hall Committee, was finally constituted, as follows: —

John A. O'Keefe, Fire Prevention Commissioner, Chairman.
Jesse A. Barrett, Chief of Peabody Fire Department.
Prof. C. B. Breed, Massachusetts Institute of Technology.
Dennis E. Carey, Chief of Lawrence Fire Department.
Frank Irving Cooper, associate architect for Russell Sage Foundation.
Gorham Dana, Manager, Underwriters' Bureau of New England.
John Grady, Fire Commissioner of Boston.
Dr. Thos. F. Harrington, Director of Hygiene in Boston Schools.
George L. Johnson, Chief of Waltham Fire Department.
William H. Sayward, secretary of Boston Master Builders Association, and chairman of Special Commission to Frame State Building Code.
David Snedden, Commissioner of Education.

R. Clipston Sturgis, architect, and former chairman of Boston Schoolhouse Commission.

John O. Taber, Senior Deputy Chief of Boston Fire Department.

Franklin H. Wentworth, secretary, National Fire Protection Association.

Lyon Weyburn, Legislative Counsel for Boston Chamber of Commerce.

William Brophy, secretary, Fire Chiefs Club of Massachusetts.

Nathaniel Bunker, Chief of Cambridge Fire Department.

Hiram L. Dorman, Schoolhouse Commissioner of Springfield.

Joseph P. Glavin, expert sprinkler worker.

George C. Halcott, Superintendent of Public Buildings, Worcester.

H. P. Jennings, President of Boston Central Labor Union.

Edward N. Kelly, expert wire lather.

Chas. A. Logue, builder, and formerly of Boston Schoolhouse Commission.

Joseph McGuinness, architect.

James McNamara, expert electrician.

Edward C. Minohan, Chief of Marlborough Fire Department.

James Moriarty, expert sheet metal worker.

Sewall M. Rich, Chief of Somerville Fire Department.

W. C. Shepard, Chief of Pittsfield Fire Department.

T. G. Toomey, in charge of fire protection in Filene's store.

This committee met at the State House, and elected the Fire Prevention Commissioner chairman. Many meetings were held through November and December, and the matter of safeguarding existing schoolhouses was very carefully considered. There appeared to be two possible lines of action: first, to prepare and distribute for the information of school authorities and municipal officials a circular on safeguarding existing schools, and second, to initiate legislation. It was decided to prepare the circular, but in regard to legislation to wait, in the expectation that a bill might be introduced by some member of the General Court or by some public body. The circular, entitled "Safeguarding Schoolhouses from Fire," was prepared by the Faneuil Hall Committee, and, as proper fire prevention work, was published and distributed by the Fire Prevention Commissioner. Late in January, 1916, when it was seen that no legislation for safeguarding schoolhouses had been introduced into the Legislature, the Faneuil Hall Committee met again. It was voted to prepare a bill that should aim in a

practical and comparatively inexpensive way to protect the lives of children in schools. In preparing this bill the committee started with the premises that most schoolhouse fires originate in the basement, and that if the fire and smoke can be kept in the basement for a reasonable time the children will be able to pass out by the usual exits. A copy of that bill in amended form is annexed to this report as Appendix III. It was referred by the Legislature of 1916 to a special recess committee, who are to report to the General Court in 1917.

The Faneuil Hall Committee are wedded to no particular bill or form of protection. With general public support they have contended that the lives of the children in the schools should be made reasonably safe.

Schoolhouse fires are regrettably frequent in Massachusetts. In the year 1915 there were twenty-six such fires in the State; in 1914 there were thirty-three. From September, 1915, to July, 1916, there were twelve schoolhouse fires in the Metropolitan District alone. With favoring circumstances any one of these fires might have developed into a tragedy. The lives of Massachusetts school children should no longer be staked on a chance.

FIRE LOSS AND INSURANCE.

There can be no question that the burden placed on the community by fire losses is vastly increased by the manner in which insurance is placed, and by the extent to which insurance is given. Over-insurance is an incitement to arson, or, at the very least, to carelessness in protecting property. The commissions paid brokers, and the manner in which those commissions are paid, lead to over-insurance, and to insurance where the hazard should prohibit all insurance. Failure on the part of the broker to inspect the risk, permits over-insurance and unduly hazardous insurance. If insurance were refused on property unless fire conditions were improved many losses would be avoided.

The present method of adjusting fire losses is vicious. The adjusters are under the control of the insured and the company. Imagine a case where the insured carried insurance to the amount of \$250,000. He has a \$5,000 fire, but wants \$25,000. He intimates that, if he is not favored, he will trans-

fer his business to another company. What will be the natural effect on the agent, and even on the company?

It is the opinion of the Fire Prevention Commissioner that legislation is needed along the following lines: —

1. Make the fees of agents in part contingent on their success in avoiding losses.
2. Limit the percentage of premiums to be used by any company in getting business.
3. Require by law that all insurance adjusters should be appointed by the Insurance Commissioner of the Commonwealth, assigned by his office to adjust losses, and paid salaries out of assessments made on the companies on some equitable basis.
4. Require personal inspection of risks by the agent. If it be impracticable on account of the expense to do this in all cases, require it in cases where the amount of the policy exceeds a certain sum. There is little doubt that the additional expense caused by such inspection would be much more than made up in decreased losses.

It is further the opinion of the Fire Prevention Commissioner that legislation along these lines would rescue the business of fire insurance from a bad situation, and would not meet with great opposition.

In the present uncertainty as to the future form of the Fire Prevention Department in Massachusetts, it has seemed to the Commissioner best that he should not present to the coming Legislature bills to accomplish these reforms.

HOUSE BILL No. 1750 (1915).

House Bill No. 1750, which was referred to a recess committee this year, proposes to make fire prevention a part of a State building department, to re-enact the fire prevention laws practically as they stand, and to transfer to the State Building Department the personnel of the present Fire Prevention Department, making the Fire Prevention Commissioner one of four deputies appointed by and subject to a State building commissioner. This proposition stands or falls with the assumption that the fire loss is mainly due to defective construction, or defective maintenance of proper construction. As a matter of fact, this assumption is not true. During the year 1915 the entire number of fires causing loss in the Metropolitan

District was 9,109; of these there were due to defective construction, or defective maintenance of proper construction, only 274, divided as follows: —

Chimney,	187
Wiring,	51
Overheated steam pipe,	10
Fireplace,	8
Furnace,	7
Gas pipe,	4
Construction,	3
Smoke pipe,	2
Gas fixture,	1
Firebox,	1

The great majority of fires are caused by poor housekeeping; they arise from matches, ashes, rubbish, improper use of fat and oils, spontaneous combustion, smoking, and so forth. These fires must be checked, not by proper construction, but by education of the community in the broadest sense, by judicious regulations, by insurance legislation, by prosecution of men guilty of arson. For this work a good builder might have no qualifications.

As far as construction enters into fire prevention it should be done or required under the supervision of the Building Department, at the request, possibly, of the Fire Prevention Commissioner.

Fire prevention work is new, and its methods have not yet been determined. It requires much initiative on the part of the official in charge. Make that official a subordinate of a building commissioner, and the incentive for initiative is largely taken away; the work will become routine; the department will be carried along by the larger department of which it is a part, and will not feel the vital necessity of showing results that exists to-day.

It seems by all means desirable that fire prevention should be worked out as a separate problem, and not merged, in its present undeveloped condition, with the administration of a State building department.

The expense of the department during the present year is 1.41 cents for each person in the Metropolitan District.

1

APPENDICES.

APPENDIX I.

CITIES AND TOWNS IN THE METROPOLITAN FIRE PREVENTION DISTRICT.

The following is a list of the cities and towns included in the Metropolitan Fire Prevention District, with the population according to the census of 1915:—

CITIES.	
Boston,	745,439
Cambridge,	108,822
Chelsea,	43,426
Everett,	37,718
Lynn,	95,803
Malden,	48,907
Medford,	30,509
Melrose,	16,880
Newton,	43,113
Quincy,	40,674
Revere,	25,178
Somerville,	86,854
Waltham,	30,154
Woburn,	16,410
	<hr/>
	1,369,887
TOWNS.	
Arlington,	14,889
Belmont,	8,081
Brookline,	33,490
Lexington,	5,538
Milton,	8,600
Reading,	6,805
Rockland,	7,074
Saugus,	10,226
Stoneham,	7,489
Watertown,	16,515
Winchester,	10,005
Winthrop,	12,758
	<hr/>
	141,470
Total population,	1,511,357

APPENDIX II.

MEMBERS OF THE FIRE PREVENTION DEPARTMENT IN
THE METROPOLITAN DISTRICT.

FIRE PREVENTION DEPARTMENT FOR THE METROPOLITAN DISTRICT.

Commissioner, John A. O'Keefe.
 Deputy Commissioner, Michael A. Murphy.
 Secretary, Harry E. Lake.

HEADS OF FIRE DEPARTMENTS IN THE METROPOLITAN DISTRICT.

CITY OR TOWN.	Head of Fire Department.	Central Fire Station.
Arlington,	Chief Walter H. Pierce,	1003 Massachusetts Ave.
Belmont,	Chief John F. Leonard,	Leonard St.
Boston,	Commissioner John Grady,	40 Bristol St.
	Chief Peter F. McDonough,	Mason St.
	Senior Deputy John O. Taber,	Fort Hill Sq.
	Junior Deputy Daniel F. Sennott,	Winalow and Dudley sts., Roxbury.
District 1,	John W. Godbold,	Paris St., East Boston.
District 2,	Allan J. Macdonald,	Main St., Charlestown.
District 3,	Stephen J. Ryder,	Pittsburgh St., South Boston.
District 4,	Edward J. Shallow,	Bullfinch St.
District 5,	William Coulter,	Mason St.
District 6,	Frank Jordan,	Dorchester St., South Boston.
District 7,	Peter E. Walsh,	Warren Ave.
District 8,	Wm. J. Gaffey,	Tremont St., Roxbury.
District 9,	Joseph H. Kenney,	Dudley St., Roxbury.
District 10,	Walter M. McLean,	Harvard St., Dorchester.
District 11,	Henry A. Fox,	Harvard Ave., Allston.
District 12,	Michael T. Mulligan,	Centre St., Jamaica Plain.
District 13,	Michael Kennedy,	Cor. Washington and Poplar sts., Roslindale.
District 14,	Maurice Heffernan,	Peabody Sq., Dorchester.
District 15,	Joseph A. Dolan,	Cor. Harvard Ave. and Winthrop St., Hyde Park.
Brookline,	Commissioner W. W. Estabrook,	340 Washington St.
	Chief Geo. H. Johnson,	340 Washington St.
Cambridge,	Acting Chief James M. Casey,	Inman Sq.

HEADS OF FIRE DEPARTMENTS IN THE METROPOLITAN DISTRICT — CON.

CITY OR TOWN.	Head of Fire Department.	Central Fire Station.
Chelsea,	Chief David M. Hudson,	307 Chestnut St.
Everett,	Chief Joseph T. Swan,	Broadway.
Lexington,	Chief Edward W. Taylor,	5 Main St.
Lynn,	Chief Edward E. Chase,	Cor. Baker and Franklin sts.
Malden,	Commissioner John H. Hannan,	Mountain Ave.
	Acting Chief John T. Nicolls,	388 Main St.
Medford,	Chief Charles M. Bacon,	1 South St.
Melrose,	Chief Joseph Edwards,	576 Main St.
Milton,	Chief J. Harry Holmes,	Danton Ave.
Newton,	Chief W. B. Randlett,	27 Willow St.
Quincy,	Chief Faxon I. Billings,	Quincy Ave.
Reading,	Chief O. O. Ordway,	11 Pleasant St.
Revere,	Chief A. L. Kimball,	Broadway.
Rockland,	Chief Fred Chapman,	Union St.
Saugus,	Chief Ernest Stuart,	Woodbury Ave.
Somerville,	Chief Sewall M. Rich,	261 Medford St.
Stoneham,	Chief A. J. Smith,	1 Tidd St.
Waltham,	Chief Geo. L. Johnson,	Moody St.
Watertown,	Chief John W. O'Hearn,	99 Main St.
Winchester,	Chief David H. DeCourcy,	Mt. Vernon St.
Winthrop,	Chief F. W. F. Woolcott,	31 Pauline St.
Woburn,	Chief Frank E. Tracy,	Winn St.

BUILDING COMMISSIONERS AND INSPECTORS IN THE METROPOLITAN DISTRICT.

Arlington,	William Gratto.
Belmont,	James R. Logan.
Boston,	Commissioner Patrick O'Hearn.
Brookline,	Commissioner E. Lyon.
Cambridge,	Jeremiah Downey.
Chelsea,	James C. Denning.
Everett,	George H. Wood.
Lexington,	William Gratto.
Lynn,	Commissioner George A. Cornet.
Malden,	C. George W. Bagge.
Medford,	Frank Blackett.
Melrose,	William S. Allen.
Milton,	G. E. Burt.

BUILDING COMMISSIONERS AND INSPECTORS IN THE METROPOLITAN
DISTRICT—Con.

Newton,	. . . . .	Commissioner Walter R. Forbush.
Quincy,	. . . . .	Warren S. Parker.
Reading,	. . . . .	Robert E. Parker.
Revere,	. . . . .	William H. Graham.
Rockland,	. . . . .	James F. Coady.
Saugus,	. . . . .	Daniel Willis.
Somerville,	. . . . .	Commissioner Geo. L. Dudley.
Stoneham,	. . . . .	Albert Smith.
Waltham,	. . . . .	Thomas Lally.
Watertown,	. . . . .	William H. Benjamin.
Winchester,	. . . . .	Maurice Dineen.
Winthrop,	. . . . .	Charles F. Hargrave.
Woburn,	. . . . .	Henry Macksey.

APPENDIX III.

AN ACT TO DEFINE THE TERM "SCHOOLHOUSE" AND RELATIVE TO THE CONSTRUCTION OF SCHOOLHOUSES.

Be it enacted, etc., as follows:

SECTION 1. The term "schoolhouse" when used in this act shall include all buildings used wholly or mainly for instruction at public or private schools, admitting pupils of primary, grammar or high school grades or their equivalent.

SECTION 2. The requirements herein set forth shall be put into effect before the first day of September, nineteen hundred and seventeen: *provided, however*, that the judge of the probate court for the county in which any schoolhouse is situated may on the application of the municipality, person, or corporation having the control of such schoolhouse approve other plans or materials that will in his opinion adequately safeguard the lives of the children in said schoolhouse.

SECTION 3. In schoolhouses not exceeding one story in height and containing more than one school room, if the heating apparatus be located in the basement, the ceiling of the basement, if constructed of combustible material, shall be protected with metal lath and cement plaster at least three quarters of an inch in thickness, or its equivalent; all spaces under walls and partitions and over girders, around heat and vent pipes, and around stairways, shall be thoroughly fire-stopped with brick in mortar, or its equivalent; and self-closing fire doors shall be installed at the top or bottom of each stairway leading from the basement to the floor above. No provision in this act shall be construed to apply to portable schoolhouses.

SECTION 4. In schoolhouses that exceed one story in height the said basement shall be cut off from the floor above in the following manner: the ceilings, underside of stairways and landings, if constructed of combustible material, shall be covered with metal lath and cement plaster, at least three quarters of an inch in thickness, or its equivalent; all spaces under walls and partitions and over girders, around heat and vent pipes, and around stairways, shall be thoroughly fire-stopped with brick in mortar, or its equivalent; and self-closing fire doors shall be installed at the top or bottom of each stairway leading from the basement to the floor above.

SECTION 5. In schoolhouses exceeding one story in height, if not of fireproof construction, where there are stairs or stairways connecting the first floor with the basement, the entire basement and all rooms above the basement used for manual training or laboratories shall be equipped

with automatic sprinklers, either wet or dry systems, provided with an adequate and constant water supply, and installed in accordance with the standard regulations adopted by the district police. Such sprinkler systems shall be adequately protected against freezing, and shall be kept in commission and under pressure whenever the building is occupied for school purposes. Where basements are equipped with automatic sprinklers, as provided in this section, the self-closing doors for basement stairways, as provided in sections three and four, need not be fire doors.

SECTION 6. In schoolhouses containing more than one room, partitions of wooden sheathing shall not be allowed in the basement, unless they be covered with metal lath and cement plaster, or its equivalent; and if heating apparatus be located in a basement that is not of fireproof construction such apparatus shall be separated from other parts of the basement by fireproof partitions, the openings in which shall be equipped with self-closing fire doors.

SECTION 7. In all schoolhouses, corridors leading to two or more exits shall be divided by a cross partition equipped with self-closing double swinging doors.

SECTION 8. Rooms situated in the attic shall not be used for class room purposes unless such rooms open on adequately lighted corridors that have two free and widely separated stairways leading to the exits from the building.

SECTION 9. In the city of Boston it shall be the duty of the building commissioner and in other parts of the commonwealth it shall be the duty of the building inspection department of the district police, to enforce the provisions of this act.

SECTION 10. If any city or town, or any official or officials in any city or town whose duty it is to appropriate money for the construction of schoolhouses or to authorize such construction, or any person or corporation having control of a private school, refuses or unreasonably neglects to carry out the provisions of this act or such order as a judge of a probate court may issue in lieu of the provisions of this act, such city or town, such official or officials, or such person or corporation, upon information presented by the building commissioner in the city of Boston, and by the chief of the district police in other parts of the commonwealth, shall be liable to a fine not exceeding one thousand dollars. It shall be the duty of said building commissioner and of said chief of the district police to present information in such cases.

SECTION 11. The requirements of this act shall apply also to all schoolhouses hereafter erected, if not of fireproof construction.

SECTION 12. Cities and towns may incur debt, within the limit of indebtedness prescribed by chapter seven hundred and nineteen of the acts of the year nineteen hundred and thirteen, and payable within ten years, for the purpose of making alterations in schoolhouses already constructed, so as to comply with the provisions of this act.

THIRD ANNUAL REPORT
OF THE
FIRE PREVENTION COMMISSIONER
FOR THE METROPOLITAN DISTRICT,
MASSACHUSETTS.

FROM AUGUST 1, 1916, TO AUGUST 1, 1917.



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The Commonwealth of Massachusetts.

TO HIS EXCELLENCY SAMUEL W. MCCALL, *Governor of the Commonwealth of Massachusetts.*

SIR:— The Fire Prevention Commissioner for the Metropolitan District herewith submits his third annual report.

Very respectfully,

JOHN A. O'KEEFE,
*Fire Prevention Commissioner
for the Metropolitan District.*

FIRE PREVENTION COMMISSIONER FOR THE METROPOLITAN DISTRICT.

THIRD ANNUAL REPORT.

RESULTS OF FIRE PREVENTION DURING 1916.

During the year 1916 the methods outlined in my previous report for checking and limiting fires were followed with increasing results. Inspections were regularly made in the city of Boston by the district chiefs, captains and lieutenants, and to a varying extent in the other cities and towns of the district. Reports of these inspections were forwarded to the office of the Fire Prevention Commissioner, and action was taken by him to correct the conditions disclosed in the reports. Inspection work is well performed in the city of Boston; in other cities and towns there is still much to be desired. The prevention of fire depends on the removal of the conditions that lead to fire, and the presence of those conditions can be learned only by inspection.

A great deal has been done towards limiting the disastrous effects of fires once started by the installation of automatic sprinkler systems throughout the district.

During the year 1916 the fire loss in Boston was reduced \$530,100 from the loss of the preceding year; throughout the rest of the district the loss of 1916 was \$363,800 less than the loss of 1915. This makes the total reduction in the district for the year 1916, \$893,900.

Not only has the loss by fire been checked, but to a very large extent the number of alarms. In 1914 the number of alarms throughout the district was 13,477; in 1916 the number of alarms was 10,568. Every alarm that calls out the fire department, whether there is a fire or not, entails considerable

expense on the city with the danger of accidents and the wear and tear of apparatus. The other day in the town of Lexington the department was called out on a needless alarm, and while out a serious fire occurred that obtained a headway which it would not have obtained had the department been in its houses. Within a few weeks in the city of Boston a part of the department was called out on a false alarm and met with a serious accident. For these reasons it has been considered very important to decrease as far as possible the number of runs.

The following table shows the loss and the per capita loss for the Metropolitan District as it is to-day made up during the years 1914, 1915 and 1916: —

Losses and Per Capita Losses in the Metropolitan District for 1914, 1915 and 1916.

	Loss for 1914.	Per Capita Loss for 1914.	Loss for 1915.	Per Capita Loss for 1915.	Loss for 1916.	Per Capita Loss for 1916.
Arlington,	\$32,200	\$2 27	\$11,400	\$0 77	\$12,800	\$0 81
Belmont,	26,000	3 42	27,400	3 40	2,200	25
Boston,	3,044,600	4 16	3,003,200	4 03	2,473,000	3 25
Brookline,	45,600	1 41	21,000	63	6,700	19
Cambridge,	201,400	1 86	207,200	1 90	330,300	3 00
Chelsea,	153,400	3 72	132,500	3 05	154,500	3 39
Everett,	67,200	1 82	68,200	1 81	23,600	61
Lexington,	26,700	4 95	12,100	2 18	19,200	3 36
Lynn,	445,400	4 71	188,700	1 93	119,900	1 23
Malden,	89,300	1 86	219,700	4 49	47,700	86
Medford,	100,600	3 47	91,200	2 99	31,100	97
Melrose,	27,300	1 64	15,600	92	8,400	49
Milton,	29,800	3 51	20,300	2 36	6,600	76
Newton,	65,700	1 51	112,300	2 60	41,300	94
Quincy,	74,000	1 89	80,600	1 98	63,100	1 49
Reading,	4,900	85	10,900	1 60	56,100	7 20
Revere,	51,000	2 14	38,400	1 83	59,000	2 22
Rockland,	104,900	15 00	12,900	1 82	21,300	3 00
Saugus,	43,500	4 63	16,400	1 61	4,300	39
Somerville,	225,800	2 66	72,600	84	112,000	1 26
Stoneham,	35,600	4 81	6,900	92	3,200	42
Waltham,	20,800	70	60,800	2 02	35,600	1 16
Watertown,	27,100	1 72	21,600	1 31	27,700	1 61
Winchester,	6,900	70	8,800	88	4,900	48
Winthrop,	17,100	1 40	30,700	2 41	76,300	5 73
Woburn,	96,900	5 97	311,500	18 90	168,500	10 10
Totals,	\$5,063,700	\$3 42	\$4,799,900	\$3 17	\$3,909,100	\$2 53
Metropolitan District outside of Boston,	\$2,019,100	\$2 70	\$1,797,000	\$2 35	\$1,436,100	\$1 83

It will be noted how generally the per capita loss has fallen,—in some instances to very low figures. The per capita loss in the city of Boston has fallen from \$4.16 in 1914 to \$3.25 in

1916; in the district outside of Boston it has fallen from \$2.70 to \$1.83.

I have given the figures showing the decrease in the total number of alarms. The following table shows the decrease in the number of fires causing losses, excluding alarms where no loss followed: —

	1914.	1915.	1916.
Arlington,	35	23	18
Belmont,	9	13	10
Boston,	2,301	2,229	1,855
Brookline,	37	42	45
Cambridge,	264	262	226
Chelsea,	258	263	180
Everett,	61	64	44
Lexington,	10	14	8
Lynn,	319	242	193
Malden,	152	139	103
Medford,	63	57	52
Melrose,	40	25	19
Milton,	16	13	14
Newton,	110	113	87
Quincy,	84	85	44
Reading,	13	14	16
Revere,	68	66	59
Rockland,	14	10	11
Saugus,	25	29	14
Somerville,	109	122	109
Stoneham,	26	21	18
Waltham,	47	61	50
Watertown,	31	29	36
Winchester,	27	20	21
Winthrop,	25	33	18
Woburn,	25	36	38
Totals,	4,169	4,025	3,288

These facts indicate that the work of limiting the fire loss is being successfully done. In this connection it must be borne in mind that this reduction is coincident with a large increase in population, and an especially large increase in the number

of buildings and in the industries carried on throughout the district.

In the report of the Boston Board of Fire Underwriters for the year 1916 occurs the following sentence: "In the list of fires below there are several which occurred in buildings recently equipped by order of the Fire Prevention Commissioner which would without question have resulted very seriously had it not been for the effective operation of the sprinklers."

The work achieved by the Fire Prevention Department will be appreciated more fully if we consider the opinion of an expert on the reduction of the fire loss in January, 1915, about the time that the Fire Prevention Department began its work. In his report published at that time Commissioner Grady of the Boston Fire Department says: —

Notwithstanding the fact that there were approximately 36,000 inspections made during the year, and in spite of the publicity campaign conducted as to the causes and prevention of fire, there were 716 more alarms than in 1913.

This brings us face to face with the fact that the public, or that part of the public whom we have tried to reach, pay little attention to the advice, warnings and the constant publicity given to the subject by those having fire prevention and extinguishment in charge, consequently the next step is to get legislation under which penalties can be meted out to those whose carelessness causes a fire.

With the incoming motor apparatus and the high-pressure fire service the appliances for extinguishing fire will have about reached their limit of efficiency, so that it is to the prevention of fire that we must devote our energy if the disgracefully enormous losses are to be curtailed.

PREVENTION AND LIMITATION OF FIRES.

When hazardous conditions are reported by an inspecting officer the occupants maintaining those conditions are notified by the department at once of the correction desired. Usually prompt attention is paid to such notification. In cases where it is not, an order is issued giving a certain time within which the changes must be made. If the changes are not made within that time prosecution follows. It is a pleasure to say that there have been very few cases where prosecution has been necessary. From July 1, 1916, to July 1, 1917, 217 such orders requiring changes in the maintenance of premises have been issued.

The means used for checking the spread of a fire once started have been: first, to facilitate the approach of the fire department by obtaining suitable entrances, aisles, etc.; second, to compel the installation of extinguishers at proper places throughout the stores and factories; and third, to require the installation of automatic sprinklers. The most effective means of checking fires is undoubtedly the automatic sprinkler. From July 1, 1916, to July 1, 1917, sprinklers were ordered throughout 52 buildings; at the same time partial sprinkler equipment was ordered in 43 other buildings. The Commissioner has hesitated to require sprinkler installation except in urgent cases on account of the very great increase in the cost to the real estate owner. Not only has the material risen very much in price, but the cost of labor has also increased so that the total cost is from two to three times what it was in 1915. In view of these facts it has seemed to the Commissioner that he should order sprinklers only in cases of extreme urgency where loss of life was in question. Many difficulties attend the matter of ordering automatic sprinklers in the cities of the district; for example, if a street is paved it is not allowable to open it up for the sake of making water connections within five years. For that reason just before the pavement is laid it becomes necessary to make as thorough an inspection of the district as is possible, and then to order sprinklers in such buildings as may seem to be in need of them; and it becomes necessary to anticipate the needs of the ensuing five years. In such cases unless there is urgency it has been the policy of the Commissioner to require water connection with the main in the street from the real estate owner, and to leave the matter of sprinklers for some future time. That plan is apparently working well. Another serious embarrassment in ordering sprinklers is that in making leases the landlord places on the tenant the obligation of executing all changes and repairs required by State or city officials. Sometimes a building is reported for sprinklers when a lease has but a year or two to run. It becomes then a question whether to commit the serious injustice of placing the entire expense of sprinkler installation on a lessee who has so short a term for the enjoyment of the premises, or to run the risk of a fire in the meantime. Questions like these confront the Commissioner all the time.

HAZARDS OUTSIDE THE CONTROL OF THE COMMISSIONER.

A serious limitation on the power of the Fire Prevention Commissioner is contained in the last two lines of section 10 of the fire prevention law which provides that no sprinkler order shall apply to any building unless four or more persons live or are usually employed therein above the second floor. The result of this provision is that sprinklers cannot be ordered in a building that is not over two stories in height, or in one where four or more people do not live or work above the second floor. It excludes from his control many woodworking establishments and very many storehouses, some of them six or seven stories in height, for the reason that although employees are constantly going up and down in such storehouses no one can be said to be usually employed above the second floor. In the interest of fire prevention this limitation should be removed.

From Jan. 1, 1916, to July 1, 1917, taking into account fires in the city of Boston where the loss was \$10,000 or more, \$750,000 of that loss occurred in buildings within the jurisdiction of the Commissioner, \$2,430,000 occurred in buildings not within his control, and, in buildings where his authority is limited by the provision above stated, the loss in such fires amounted to \$1,810,000. It is apparent then that the fires in such buildings cause a very large proportion of the entire loss in the city of Boston, and that it is most desirable to give the Commissioner authority to protect such buildings against fire.

FIREWORKS.

This spring it was proposed by the Fire Commissioner of the city of New York to the officials of all large cities throughout the country to abolish the sale and use of fireworks throughout the present war. The sale and use of fireworks in the city of New York are not now allowed. It seemed to the Fire Prevention Commissioner that any action in this matter should affect the entire State, and he suggested to the committee having in charge House Bill No. 1996 to incorporate the following section: —

The governor, with the advice and consent of the council, shall have power by proclamation to prohibit or regulate the use of fireworks and firecrackers throughout the commonwealth at such times as he may deem the public interest may require. Such prohibition or regulation shall continue until revoked by the governor. Subject to such prohibition or regulation as may be proclaimed by the governor, the authority of cities, towns and officials under existing law to prohibit or regulate the use of fireworks and firecrackers shall not be abridged or affected by the provisions of this section.

That was done and power was given the Governor to prohibit the use of fireworks or firecrackers should he judge it wise.

FACTORY FIRES.

In my second annual report I stated that an attempt had been made to control factory fires through the co-operation of the labor unions. It is in the power of the Commissioner to forbid smoking in factories; but it seemed to him a better plan to stimulate the interest of the wage earners in the attempt to save other wage earners from losing their work. In that report I stated also that factory fires for the first five months in 1916 showed a decrease over the first five months of 1915 from 113 to 63. It is gratifying for me to be able to say that the records of the first five months of the present year show only 35 factory fires. Smoking is the common cause of factory fires, and the form in which most of them originate is this: a worker stands in front of a blower smoking a cigarette and some one in authority approaches, and in order to avoid detection the worker carelessly throws the cigarette into the blower. In the city of Lynn, especially, that has been reported as a cause of factory fires. I have no doubt it is equally so elsewhere. The remedy for that is an appeal to the conscience of the worker. The results of such an appeal made in 1915 have been so satisfactory that that method will still be followed. In the meantime in many factories up-to-date proprietors or managers are providing a properly safeguarded room where the men may smoke during the noon hour. This is to be recommended, not only for humanitarian reasons but also because it is a real step in the work of fire prevention.

CONTROL OF EXPLOSIVES IN 1917.

During the early months of 1917 the Commissioner caused an examination to be made of all magazines in the city of Boston in which explosives were kept. This examination was made by the Deputy Commissioner and was very thorough. It disclosed a great variation in construction and in care used in guarding the magazines. Later, a theft by certain boys in Roxbury of some sticks of dynamite forced upon the Commissioner the belief that the entire matter must be handled in a radical fashion. Governor McCall was very much interested in the work, and by the Governor and Council an appropriation was made that enabled the Commissioner to employ an explosive expert, Mr. N. Richardson, to make a further examination of every magazine in the entire district. In the outside cities and towns it was found that dynamite was kept even more carelessly than in the city of Boston.

No magazine would be proof against evil-disposed persons who desired to enter it, and who were fully prepared for that purpose. For that reason it seemed that the keeping of dynamite should be limited entirely to magazines that were guarded day and night. In the city of Boston there were 24 magazines; of these, the licenses were revoked for all but 5, where guards were maintained; outside the city of Boston there were 74 magazines, and these were reduced to 13, where guards were maintained.

In order to accommodate persons using small quantities of dynamite arrangements were made with the proprietors of guarded magazines in different localities to accept from them such small quantities of dynamite as they might have on hand. A careful account of the dynamite stored in these magazines by each person is kept by the proprietors of the magazines so that at any time it is possible for the Fire Prevention Commissioner, or any person to whom he has delegated the work, to visit the magazine and learn just who is keeping dynamite there. It is further arranged that the proprietors of guarded magazines shall receive dynamite from no person who has not a license to use it.

In this work of guarding high explosives the assistance of the

wholesale dealers has been of the greatest importance. Although the regulations have necessarily placed some restraint on their business they have cheerfully joined in and have made the reports desired by the Commissioner. They sell to no one who has not a license to buy.

In this way the storage and use of dynamite has been strictly regulated, and no doubt this regulation has contributed its share towards the freedom from dynamite outrages that the Metropolitan District has enjoyed during the past six months.

At the present time a standard form of construction for magazines and a standard lock to safeguard them are under consideration.

The railroad agents have also done their share by advising the heads of fire departments immediately in the different cities and towns of the arrival at their freight yards of consignments of explosives.

In order to show the fine spirit with which the contractors of Boston have entered into the plan to safeguard dynamite I desire to give a quotation from a meeting held by a committee of them April 10, 1917, and the names of the contractors constituting the committee: —

It was the sense of the meeting that every precaution be taken by the consumers of dynamite to protect the welfare of the Commonwealth, and that a concerted effort be made to co-operate with the Fire Prevention Commissioner in handling this particular problem.

Respectfully submitted,

HUGH NAWN, *Chairman,*
WILLIAM J. BARRY,
JOHN C. COLEMAN,
MARTIN J. FINN,
BERNARD MALONE,
RANSOM ROWE,
THOMAS F. WELCH,
E. L. WEBBER, *Dynamite Manu-
facturers' Representative,*
Committee.

SHIPMENT OF HIGH EXPLOSIVES FROM BOSTON HARBOR.

Throughout his term of office the influence of the Commissioner has been exerted against the shipment of high explosives from Boston Harbor. It did not seem to him that the increase in trade would justify the danger of great destruction of life and property that would be connected with the handling of such high explosives. He was confirmed in his view by the New Jersey explosions.

At the present time the only substance approaching high explosives that is shipped from the port of Boston is benzol, from a plant in Canada, that arrives at a certain time at the docks in East Boston. Notice is at once given by the railroads to the District Chief of the Boston Fire Department for that district, and under his direction the benzol is taken on lighters and loaded on a steamer from the outer side, in order to minimize the danger to wharf property.

EFFECT OF FIRE PREVENTION MEASURES ON INSURANCE.

The general effect of fire prevention measures is to lower the rate of insurance. That is done mainly through the installation of sprinklers. Three years ago sprinklers might be installed at a price that would recoup the proprietor the cost of installation in seven or eight years from lower insurance rates. To-day that is not so, and the sole object achieved by sprinklers is the greater safety of property and life. I am giving below a table that shows the percentage reduction in insurance rates allowed in Boston during the past year on buildings sprinklered throughout or in part.

PART OF BUILDING SPRINKLERED.	Insurance Reduction (Per Cent.).	Number of Buildings.
Throughout,	12½	5
Throughout,	15	27
Throughout,	20	52
Throughout,	22½	31
Throughout,	30	2
Basement,	2½	3

PART OF BUILDING SPRINKLERED.	Insurance Re- duction (Per Cent.).	Number of Buildings.
Basement,	5	14
Basement,	7½	1
Basement and sub-basement,	10	1
Basement and first floor,	5	2
Basement and first floor,	7½	1
Basement and first floor,	15	1
Basement and second floor,	5	1
Basement and fourth floor,	5	1
Basement and partial,	10	3
Partial,	7½	1
Partial,	5	1
No allowance made: —		
Throughout,	—	35
Partial,	—	37

In connection with the reduction in insurance rates it is well to remember that in Boston when a building is equipped throughout with a system of automatic sprinklers, thus reducing the insurance rate on the premises by 20 per cent., the proprietors of adjoining buildings are entitled to a reduction in their insurance rates amounting to 20 per cent. of the proportion of the rate imposed for exposure hazard from this building.

WATER-FRONT CONDITIONS IN BOSTON.

There is always the danger of a serious conflagration along the water front in the city of Boston. A great deal has been done to remedy that by forbidding the sale or delivery of gasoline and other inflammable fluids at the wharves to boats in the docks. The sale of such fluids has been limited to certain boats stationed in the harbor and maintained under strict conditions. Permission has been sought to deliver gasoline in tanks and barrels at the wharves, but the delivery of such tanks and barrels means the return of empties at the same places. It is said to have been empty tanks that caused the disastrous freight yard fire in Charlestown in March, 1916. For these reasons the Commissioner has refused to allow the de-

livery of gasoline even in drums and barrels. There is also the fact that the gasoline would be emptied from the drums and barrels by the pleasure or fishing boats into their tanks while lying at the wharves.

The present system is not wholly satisfactory, and it is hoped ultimately to establish a gasoline sales station either on an island in the harbor or at some point so situated that it will furnish no danger of fire and will convenience the boats.

IN GENERAL.

After a concerted effort for the regulation of hazardous trades, the protection of unsafe buildings, the improvements in maintenance, and the careful use of fire, evidence of satisfactory results are at hand and presage a large economic saving.

But this desirable effect of fire prevention depends to a large extent upon the willingness of the people to continue to co-operate and accept the decisions of the Commissioner, even though it means a moderate investment for the protection of property.

Oftentimes, as is illustrated by the reduction in exposure hazard due to the installation of automatic sprinklers, this expenditure will not only insure self-protection, but it will also greatly reduce the hazard of the neighboring buildings.

The Commissioner, therefore, asks for assistance towards the reduction of alarms, the reduction of fires, the reduction of loss, and finally the reduction of the cost of insurance.

The expense of the department for 1916 was $1\frac{1}{3}$ cents for each person in the Metropolitan District.

APPENDICES.

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APPENDIX I.

CITIES AND TOWNS IN THE METROPOLITAN FIRE PREVENTION DISTRICT.

The following is a list of the cities and towns included in the Metropolitan Fire Prevention District, with the population according to the census of 1915:—

CITIES.	
Boston,	745,439
Cambridge,	108,822
Chelsea,	43,426
Everett,	37,718
Lynn,	95,803
Malden,	48,907
Medford,	30,509
Melrose,	16,880
Newton,	43,113
Quincy,	40,674
Revere,	25,178
Somerville,	86,854
Waltham,	30,154
Woburn,	16,410
	1,369,887
TOWNS.	
Arlington,	14,889
Belmont,	8,081
Brookline,	33,490
Lexington,	5,538
Milton,	8,600
Reading,	6,805
Rockland,	7,074
Saugus,	10,226
Stoneham,	7,489
Watertown,	16,515
Winchester,	10,005
Winthrop,	12,758
	141,470
Total population,	1,511,357

APPENDIX II.

MEMBERS OF THE FIRE PREVENTION DEPARTMENT IN
THE METROPOLITAN DISTRICT.

FIRE PREVENTION DEPARTMENT FOR THE METROPOLITAN DISTRICT.

Commissioner, John A. O'Keefe.
 Deputy Commissioner, Michael A. Murphy.
 Secretary, Harry E. Lake.

HEADS OF FIRE DEPARTMENTS IN THE METROPOLITAN DISTRICT.

CITY OR TOWN.	Head of Fire Department.	Central Fire Station.
Arlington,	Chief Walter H. Peirce,	1003 Massachusetts Ave.
Belmont,	Chief John F. Leonard,	Leonard St.
Boston,	Commissioner John Grady,	40 Bristol St.
	Chief Peter F. McDonough,	Mason St.
	Senior Deputy John O. Taber,	Fort Hill Sq.
	Junior Deputy Daniel F. Sennott,	Winslow and Dudley sts., Roxbury.
District 1,	Wm. E. Riley,	Paris St., East Boston.
District 2,	Allan J. Macdonald,	Main St., Charlestown.
District 3,	Stephen J. Ryder,	Pittsburgh St., South Boston.
District 4,	Edward J. Shallow,	Bullfinch St.
District 5,	Albert J. Caulfield,	Mason St.
District 6,	Frank Jordan,	Dorchester St., South Boston.
District 7,	Peter E. Walsh,	Warren Ave.
District 8,	Wm. J. Gaffey,	Tremont St., Roxbury.
District 9,	Joseph H. Kenney,	Dudley St., Roxbury.
District 10,	Walter M. McLean,	Harvard St., Dorchester.
District 11,	Henry A. Fox,	Harvard Ave., Allston.
District 12,	Michael T. Mulligan,	Centre St., Jamaica Plain.
District 13,	Michael Kennedy,	Cor. Washington and Poplar sts., Roslindale.
District 14,	Maurice Heffernan,	Peabody Sq., Dorchester.
District 15,	Joseph A. Dolan,	Cor. Harvard Ave. and Winthrop St., Hyde Park.
Brookline,	Commissioner W. W. Estabrook,	340 Washington St.
	Chief Geo. H. Johnson,	340 Washington St.
Cambridge,	Chief James M. Casey,	Inman Sq.

HEADS OF FIRE DEPARTMENTS IN THE METROPOLITAN DISTRICT — CON.

CITY OR TOWN.	Head of Fire Department.	Central Fire Station.
Chelsea,	Chief David M. Hudson,	307 Chestnut St.
Everett,	Chief Joseph T. Swan,	Broadway.
Lexington,	Chief Edward W. Taylor,	5 Main St.
Lynn,	Chief Edward E. Chase,	Cor. Baker and Franklin sts.
Malden,	Commissioner John H. Hannan,	Mountain Ave.
	Chief John T. Nicolls,	388 Main St.
Medford,	Chief Charles M. Bacon,	1 South St.
Melrose,	Chief Joseph Edwards,	576 Main St.
Milton,	Chief J. Harry Holmes,	Danton Ave.
Newton,	Chief W. B. Randlett,	27 Willow St.
Quincy,	Chief Faxon I. Billings,	Quincy Ave.
Reading,	Chief O. O. Ordway,	11 Pleasant St.
Revere,	Chief A. L. Kimball,	Broadway.
Rockland,	Chief Fred Chapman,	Union St.
Saugus,	Chief Ernest Stuart,	Woodbury Ave.
Somerville,	Chief Sewall M. Rich,	261 Medford St.
Stoneham,	Chief A. J. Smith,	1 Tidd St.
Waltham,	Chief Geo. L. Johnson,	Moody St.
Watertown,	Chief John W. O'Hearn,	99 Main St.
Winchester,	Chief David H. DeCourcy,	Mt. Vernon St.
Winthrop,	Chief F. W. F. Woolcott,	31 Pauline St.
Woburn,	Chief Frank E. Tracy,	Winn St.

BUILDING COMMISSIONERS AND INSPECTORS IN THE METROPOLITAN DISTRICT.

Arlington,	William Gratto.
Belmont,	James R. Logan.
Boston,	Commissioner Patrick O'Hearn.
Brookline,	Commissioner E. Lyon.
Cambridge,	Jeremiah Downey.
Chelsea,	James C. Denning.
Everett,	A. T. Macduff.
Lexington,	William Gratto.
Lynn,	Commissioner George A. Cornet.
Malden,	C. George W. Bagge.
Medford,	Frank B. Blodgett.
Melrose,	William S. Allen.
Milton,	G. E. Burt.

BUILDING COMMISSIONERS AND INSPECTORS IN THE METROPOLITAN
DISTRICT — Con.

Newton,	.	.	.	.	.	Commissioner Walter R. Forbush.
Quincy,	.	.	.	.	.	Warren S. Parker.
Reading,	.	.	.	.	.	Robert Parker.
Revere,	.	.	.	.	.	William H. Graham.
Rockland,	.	.	.	.	.	Fred Chapman.
Saugus,	.	.	.	.	.	Daniel Willis.
Somerville,	.	.	.	.	.	Commissioner Geo. L. Dudley.
Stoneham,	.	.	.	.	.	Albert Smith.
Waltham,	.	.	.	.	.	A. L. Cole.
Watertown,	.	.	.	.	.	William H. Benjamin.
Winchester,	.	.	.	.	.	Maurice Dineen.
Winthrop,	.	.	.	.	.	Charles F. Hargrave.
Woburn,	.	.	.	.	.	Henry Macksey.



Public Document

No. 107

FOURTH ANNUAL REPORT
OF THE
FIRE PREVENTION COMMISSIONER
FOR THE METROPOLITAN DISTRICT,
MASSACHUSETTS.

FROM AUGUST 1, 1917, TO AUGUST 1, 1918.



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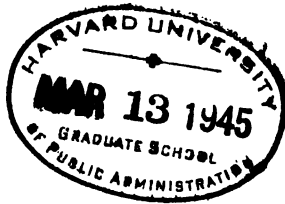
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FOURTH ANNUAL REPORT
OF THE
FIRE PREVENTION COMMISSIONER
FOR THE METROPOLITAN DISTRICT,
MASSACHUSETTS.

FROM AUGUST 1, 1917, TO AUGUST 1, 1918.



BOSTON:
WRIGHT & POTTER PRINTING CO., STATE PRINTERS,
32 DERNE STREET.
1918.



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The Commonwealth of Massachusetts.

TO HIS EXCELLENCY SAMUEL W. MCCALL, *Governor of the Commonwealth of Massachusetts.*

SIR: — The Fire Prevention Commissioner for the Metropolitan District herewith submits his fourth annual report.

Very respectfully,

FRANK LEWIS,
*Fire Prevention Commissioner
for the Metropolitan District.*

AUG. 1, 1918.

FIRE PREVENTION COMMISSIONER FOR THE METROPOLITAN DISTRICT.

FOURTH ANNUAL REPORT.

RESULTS OF FIRE PREVENTION DURING 1917.

During the year 1917 the fire prevention work was carried on along the same lines as in the past. A large number of inspections were made by the local fire departments, and in nearly every case bad conditions were corrected. Many orders for the removal of rubbish and other combustible waste material were issued and subsequently complied with. During the year 1917 the loss in Boston was larger than it has been since 1905, due to the fact that there were many more large fires where the losses exceeded \$10,000 each.

In 1915 there were 47 fires where the loss exceeded \$10,000 each, with a total loss of \$1,787,400; in 1916 there were 38 such fires with a total loss of \$1,363,600; and in 1917 there were 53 such fires with a total loss of \$3,117,300, an amount in excess of total fire loss in Boston in any year since 1913. These fires indicate that the losses occurred in buildings located in the congested value district, where sprinkler protection is necessary, and that only by the further installation of automatic sprinklers can these large losses be prevented.

FIRE PREVENTION.

[Aug.]

Losses and Per Capita Losses in the Metropolitan District for 1914, 1915, 1916 and 1917.

	Loss for 1914.	Per Capita Loss for 1914.	Loss for 1915.	Per Capita Loss for 1915.	Loss for 1916.	Per Capita Loss for 1916.	Loss for 1917.	Per Capita Loss for 1917.
Arlington,	\$32,200	\$2 27	\$11,400	\$0 77	\$12,600	\$0 81	\$46,700	\$2 83
Belmont,	26,000	3 42	27,400	3 40	2,200	25	53,100	5 84
Boston,	3,044,600	4 16	3,003,200	4 03	2,473,000	3 25	4,056,400	5 23
Brookline,	45,600	1 41	21,000	63	6,700	19	23,600	66
Cambridge,	201,400	1 56	207,200	1 90	330,300	3 00	299,500	2 70
Chelsea,	183,400	3 73	132,500	3 05	154,500	3 39	87,300	1 83
Everett,	67,200	1 32	68,200	1 81	23,600	61	68,000	1 74
Lexington,	26,700	4 96	12,100	2 18	19,200	3 36	2,600	45
Lynn,	445,400	4 71	188,700	1 93	119,900	1 33	174,600	1 77
Malden,	89,300	1 86	219,700	4 49	47,700	1 96	63,600	1 25
Medford,	100,600	3 47	91,200	2 99	31,100	97	32,100	96
Melrose,	27,300	1 64	16,600	92	8,400	49	39,900	2 29
Milton,	29,800	3 51	20,300	2 50	6,600	76	6,000	74
Newton,	65,700	1 51	112,300	2 86	41,300	94	63,200	1 42
Quincy,	74,000	1 89	80,600	1 98	63,100	1 49	81,200	1 85
Reading,	4,900	85	10,900	1 60	56,100	7 20	16,900	1 92
Revere,	51,000	2 14	38,400	1 53	59,000	2 22	28,200	1 01
Rockland,	104,900	15 00	12,900	1 82	21,300	3 00	2,100	30
Saugus,	43,600	4 63	16,400	1 61	4,300	39	22,300	1 89
Somerville,	225,800	2 66	72,600	1 84	112,000	1 26	112,500	1 24
Stonham,	35,600	4 81	6,900	92	3,200	42	36,600	4 83
Waltham,	20,800	70	60,800	2 02	35,600	1 16	32,800	1 05
Watertown,	27,100	1 72	21,600	1 31	27,700	1 61	44,700	2 66
Winchester,	6,900	70	8,800	88	4,900	48	30,400	2 96
Winthrop,	17,100	1 40	30,700	2 41	76,300	5 73	13,200	96
Woburn,	96,900	5 97	311,500	18 90	168,500	10 10	54,300	3 21
Metropolitan District,	\$5,063,700	\$3 42	\$4,799,900	\$3 17	\$3,909,100	\$2 53	\$5,493,000	\$3 47
Massachusetts outside of Metropolitan District,	\$21,130,600	-	\$4,594,000	\$2 24	\$5,870,000	\$2 65	\$6,172,000	\$2 75
Metropolitan District outside of Boston,	\$2,019,100	\$3 70	\$1,797,000	\$3 35	\$1,496,100	\$1 83	\$1,436,600	\$1 78

As will be noted from the table the fire loss in the Metropolitan District, leaving out the city of Boston, has shown a constant decrease each year from \$2.70 per capita in 1914 to \$1.78 in 1917, whereas omitting the year 1914 on account of the large Salem fire, the per capita loss in Massachusetts outside of the Metropolitan District has shown a constant increase each year from \$2.24 in 1915 to \$2.75 in 1917. The fire loss in the Metropolitan Fire Prevention District in 1917 was approximately the same as in 1916, \$1,436,600, whereas the fire loss in Massachusetts outside the Metropolitan District in 1917 was \$6,172,000, and in 1916, \$5,870,000, or a loss in 1917 of \$302,000 greater than in 1916.

Total Alarms.

	1915.	1916.	1917.
Arlington,	107	96	125
Belmont,	53	42	53
Boston,	5,542	4,572	4,785
Brookline,	312	261	291
Cambridge,	709	696	699
Chelsea,	533	502	414
Everett,	291	243	286
Lexington,	140	77	93
Lynn,	1,061	915	1,016
Malden,	399	274	314
Medford,	422	260	325
Melrose,	203	119	179
Milton,	148	123	167
Newton,	747	460	542
Quincy,	493	221	378
Reading,	125	101	95
Revere,	302	264	270
Rockland,	44	44	37
Saugus,	105	87	109
Somerville,	633	476	410
Stoneham,	55	37	63
Waltham,	299	202	281
Watertown,	148	138	123
Winchester,	117	115	96
Winthrop,	155	90	118
Woburn,	172	154	167
Total,	13,315	10,568	11,436

Number of Fires causing Losses, excluding Alarms where no loss followed.

	1914.	1915.	1916.	1917.
Arlington,	35	23	18	33
Belmont,	9	13	10	15
Boston,	2,301	2,229	1,855	1,936
Brookline,	37	42	45	48
Cambridge,	264	262	226	225
Chelsea,	258	263	180	155
Everett,	61	64	44	46
Lexington,	10	14	8	3
Lynn,	319	242	193	210
Malden,	152	139	103	74
Medford,	63	57	52	67
Melrose,	40	25	19	33
Milton,	16	13	14	22
Newton,	110	113	87	94
Quincy,	84	85	44	48
Reading,	13	14	16	13
Revere,	68	66	59	92
Rockland,	14	10	11	8
Saugus,	25	29	14	19
Somerville,	109	122	109	104
Stoneham,	26	21	18	21
Waltham,	47	61	50	63
Watertown,	31	29	36	17
Winchester,	27	20	21	14
Winthrop,	25	33	18	24
Woburn,	25	36	38	28
Totals,	4,169	4,025	3,288	3,412

Although the number of alarms for 1917 was slightly larger than for 1916, owing to the dry spring, yet the number of alarms in 1917 was smaller by 1,879 than the number in 1915. From a comparison of the figures given in the table showing the fires causing losses, it is evident that there has been a large reduction in the number of such fires. In 1914 there were 4,169 such fires, and in 1917 there were 3,412, or a decrease of 757. In 1914, outside of the Metropolitan District, there were 4,260 such fires, and in 1917, 3,781, or a decrease of 479.

	1914.	1915.	1916.	1917.
Metropolitan District,	4,189	4,025	3,288	3,412
Massachusetts, outside Metropolitan District,	4,280	4,005	3,813	3,781

The reduction in the Metropolitan District for the three years preceding 1917 was a little over 18 per cent., while the reduction outside the Metropolitan District for the same period was a little over 11 per cent.

PREVENTION AND LIMITATIONS OF FIRES.

Since the last report of this department the work along fire-prevention lines has been greatly hampered because of war conditions. In the first place, it has been more difficult from day to day to obtain fire-fighting and fire-protection equipment. A short time ago the attention of the Commissioner was called to the fact that the can companies were not able to procure material for the production of safety cans, oily waste cans, ash cans, etc., but through his effort this condition has been relieved temporarily. In the second place, the expense of providing such equipment has increased to such an extent that it is difficult, and in certain cases impossible, to require changes on account of the limitations of the Commissioner's power to issue an order in excess of 5 per cent. of the assessed valuation of buildings and land.

During the past year 52 orders have been issued for automatic sprinklers in buildings, and under these orders 4 buildings have been equipped throughout, and 8 buildings partially protected. There are pending 18 orders for equipment throughout and 22 for partial equipment.

The cost of protecting buildings by automatic sprinklers has advanced to such an extent that sprinklers have been ordered only where such protection is absolutely necessary to protect the lives of the people living or working there, or the building and the neighborhood where it is located. Three years ago automatic sprinklers were installed at a cost as low as \$3 per head, whereas the cost of such equipment to-day in a similar building will be approximately \$15 per head. At the original cost of sprinkler protection, systems were installed and equip-

ment paid for in a few years by the saving in insurance on buildings and contents. But such is not the case to-day at the high cost of sprinkler protection.

FACTORY FIRES.

It is gratifying to note that the method adopted by the Commissioner for controlling factory fires is still producing results. As is clearly shown in the third annual report of the Commissioner the number of factory fires for the first five months of 1915 was 113, in 1916 for the same period, 63, and in 1917, 35. In 1918 the number of factory fires was 47. Although this is larger than 1917, yet it shows a general decrease over the first two years quoted.

CONTROL OF EXPLOSIVES IN 1918.

After the examination of explosive magazines throughout the Metropolitan District in 1917, it was found that the magazines were in such condition and in such location as to require a guard to be maintained over them constantly, and at the present time all magazines in the Metropolitan District containing explosives are protected by guards. The users of explosives have shown a fine spirit of co-operation, and no complaints indicating any hardships on the part of users of explosives have been received by the Commissioner.

The matter of maintaining guards over some of the magazines in the daytime has been considered by the Commissioner with a view to modifying the requirement. The Commissioner has decided that if a magazine is properly constructed and located, and provided with a proper mortised lock, so that it will be difficult to explode the magazine or to enter it for the purpose of stealing some of the contents, he will not require guards over the magazine in the daytime if the magazine is visited several times daily. The wisdom of the guard service is clearly shown by the fact that in the Metropolitan District there have been very few outrages with the use of explosives, and in cases where small amounts of explosives have been found, the indications are that the explosive has been brought into the Metropolitan District from some place without.

FIREWORKS.

This year it seemed proper for the Commissioner to prohibit the sale of fireworks of every description, having in mind the hazard to property and the opportunity furnished to persons of evil intent to cause explosions and fires. The city of Boston had less alarms than on any July 4 in its history, and no serious fires occurred in the Metropolitan District upon that day. That life also was conserved was shown by the absence of reports of deaths and injuries from fireworks this year. For the duration of the war, at least, fireworks will not be permitted to be sold in the Metropolitan District, except for special occasions under a special permit from the Commissioner.

WATER-FRONT CONDITIONS IN BOSTON.

Except the explosives which have been handled by the United States government, no explosives have been transported through the city of Boston for shipment abroad or shipped abroad from Boston. The nature of the water front is such that it would be dangerous at the present time to allow large shipments of explosives to be made from this port. Not only has the shipment of explosives been prohibited, but also shipment of drums of benzol and other inflammable fluids, except a small amount which was handled under the regulations of the Fire Prevention Commissioner and the direction of the Fire Commissioner of the city of Boston.

The delivery of gasoline and oils to fishing vessels, motor boats, etc., is still being made from vessels stationed in the harbor. There are at the present time three such vessels located under the direction of the harbor master, and a fourth one will be installed in a short time. Although this method of delivery is not as convenient as the fishermen and others desire, yet the number of accidents and the seriousness of the accidents indicate that the method is much preferable to the one used in 1914, which allowed delivery to be made by tank wagons, wooden barrels and steel drums over the combustible wharves and piers. The Commissioner now has under advisement the matter of deliveries to small supply boats, which are used to supply the vessels stationed in the harbor. As is noted in the

last report of the Commissioner, the present system is not very satisfactory. The accumulation of motor boats containing large quantities of gasoline and other oils at some of the combustible piers represents a hazard to the water front, and some method of reducing this hazard will have to be adopted.

PUBLIC GARAGES.

During this year a systematic examination has been made of all the public and business garages throughout the Metropolitan District, and changes have been made in them to make them comply with the present regulations of this department. The conditions of maintenance have been greatly improved, and fire protection devices, such as fire doors, extinguishers and sand pails, have been installed. Repair shops have been separated from the portions of the garage occupied for storage by proper fire walls, with openings protected by self or automatic closing fire doors. In many cases woodwork on the interior of the garages has been covered with either sheet metal or metal lath and cement plaster.

SMOKING IN WAREHOUSES.

At the request of the Public Safety Committee and the committee representing the warehouses working with the Public Safety Committee, the regulation prohibiting smoking in warehouses was established, and a copy of this regulation, which is given below, was mailed to all the warehouses in the Metropolitan District. It is to be hoped that there will be no warehouse fires in the future caused by careless smoking, or by the careless disposition of cigars, cigarettes or matches.

REGULATION GOVERNING SMOKING IN PUBLIC AND PRIVATE WAREHOUSES.

No person shall smoke or carry a lighted cigar, cigarette or pipe in a public or private warehouse situated in the Metropolitan Fire Prevention District of Massachusetts, and notices to that effect in letters $2\frac{1}{2}$ inches or more in height and with stroke $\frac{1}{2}$ inch or more shall be conspicuously posted at the entrance to and within the warehouse. These notices shall bear the words "By order of the Fire Prevention Commissioner" in letters $\frac{1}{2}$ inches in height and $\frac{1}{2}$ inch stroke, and the expression "Penalty for violation \$50." and shall read as follows:—

SMOKING PROHIBITED

By Order of the Fire Prevention Commissioner.

PENALTY FOR VIOLATION, \$50.

HAZARDS OUTSIDE THE CONTROL OF THE COMMISSIONER.

In the last annual report of the Commissioner attention was called to the fact that large losses occurred in buildings which were not under the control of this department, by reason of the fact that four or more persons do not live or are they usually employed therein above the second floor. This matter was also called to the attention of the Legislature and a bill introduced which would give the Commissioner jurisdiction over such buildings where four or more persons do not live or are usually employed above the second floor, such as wood-working establishments, storehouses, etc. The Commissioner should be given jurisdiction over such buildings in order that he may exercise control over hazardous conditions in them, even though it is not necessary to require the installation of sprinklers. Many conditions of maintenance are remedied by reason of the fact that the Commissioner can require sprinklers if the conditions of maintenance are not corrected.

From July 1, 1917, to Jan. 1, 1918, taking into account fires in the city of Boston where the loss is \$10,000 or more, a loss of \$420,000 occurred in buildings within the jurisdiction of the Commissioner; a loss of \$840,000 occurred in buildings not within his control, and in buildings where his authority is limited by the provision above stated, the loss in such fires amounted to \$740,000. These large losses represent a very large proportion of the entire losses in the city of Boston, and it seems most desirable to give the Commissioner authority to protect such buildings against fire.

FIRE PROTECTION IN STABLES FOR HORSES AND MULES.

In 1916 the following act was passed providing for better means of egress for horses and mules in stables: —

CHAPTER 158, GENERAL ACTS OF 1916.

AN ACT TO REQUIRE FIRE PROTECTION IN STABLES FOR HORSES AND MULES.

SECTION 1. No horse or mule shall be stabled on the second or any higher floor of any building unless there are two means of exit therefrom, at opposite ends of the building, to the main or street floor.

SECTION 2. This act shall not apply to stables equipped with an automatic sprinkler system.

SECTION 3. Any violation of this act shall be punished by a fine of not more than two hundred dollars.

SECTION 4. This act shall take effect on the first day of January in the year nineteen hundred and seventeen.

It will be noted that this act took effect Jan. 1, 1917. A list of all the stables which did not comply with this act was furnished the Fire Prevention Commissioner by the local heads of the Fire Departments previous to that time. There were 167 such stables in Boston and 46 in the Metropolitan District outside of Boston. Up to the present time in the city of Boston 5 such stables have been sprinklered, 121 provided with a second runway, 20 vacated to comply with the law, and there are 21 which are not in conformity with the law. Outside of Boston in the Metropolitan District 5 stables have been sprinklered, 20 provided with a second runway, 15 vacated to comply with the law, and there are 6 which are not in conformity with the law. Since the stable act went into effect fewer horses have been killed by fire, and there is no doubt but that the installation of sprinklers or better egress will protect the horses which have been stabled on the upper stories of buildings.

LEGISLATION RECOMMENDED.

1. Section 7 of the fire prevention statute gives the Commissioner jurisdiction over the storage, keeping or handling of any combustible article for other than domestic purposes, or of any article or material that may be dangerous to the public safety as a fire menace, provided it is stored, kept or handled in a building used for habitation or on that part of any lot within 50 feet of a building so used.

In view of the fact that combustible material, stored in a combustible building represents a far greater hazard than it would if stored on an open lot, it seems desirable that section 7 should be amended by inserting the words "or building or structure situated thereon" after the word "lot" in the second line, so as to read: "SECTION 7. No part of any building used for habitation, nor that part of any lot or building or

structure situated thereon within fifty feet of any building so used," etc.

2. Section 13 of the fire prevention statute provides that the Commissioner shall have power to make orders and rules relating to fires, fire protection and fire hazard binding throughout the Metropolitan District or any part of it, or binding upon any person or class of persons within said district, limited, however, to the following subjects, etc.

In order to violate this section it would be necessary to violate an order or rule made under this section. The Fire Prevention Commissioner has made regulations under this section on out-of-door fires, and in one or two cases of prosecution the defendant has been found guilty and the case placed on file in the lower court, the judge ruling that the penalty under section 27 of the said statute does not apply to violations of rules made under section 13. Section 27 should be amended by inserting after the word "act", in the second line, the words "or any rule or regulation made hereunder", so as to read: "SECTION 27. Except as is otherwise hereinbefore provided, any person violating any provision of this act, or any rule or regulation made hereunder, shall be guilty of a misdemeanor," etc.

3. Section 10 of the fire prevention statute should be amended by striking out after the word "Sprinklers", in the sixteenth line, the words "*provided, however,* that no such order shall apply to any building unless four or more persons live or are usually employed therein above the second floor."

4. Section 1 of chapter 370 of the Acts of 1904, as amended by various acts, should be amended by inserting after the word "inflammable", the word "gases", and after the word "compounds", the words "or other gases, fluids or compounds which may become dangerous to the public safety as a fire or explosion menace." This extended jurisdiction would give the Commissioner the power to make regulations controlling such gases as oxygen, hydrogen, acetylene, etc.; such liquids as acids, which are extremely dangerous to the lives of the firemen fighting fire; and such elements as sodium, potassium and phosphorus, which are exceedingly dangerous substances.


5. In section 4 of chapter 655 of the Acts of 1913 it will be noted that the determination of whether or not a building or structure is unsafe in case of fire is left with the superintendent of public buildings or such other officer as may be designated as "inspector of buildings." It will be noted further that this section applies only to cities and towns which have accepted the provisions of this section or the corresponding provision of earlier laws. There are in nearly every city and town in the Metropolitan District a number of old buildings of no value for occupancy which are in various stages of dilapidation, and which should be removed. The Fire Prevention Commissioner, whose duty it is to study fire, fire hazard and fire prevention and all matters relating thereto, has no jurisdiction over such buildings.

In view of the fact that these buildings are allowed to exist and are continually causing expense and trouble to the local fire departments, the Fire Prevention Commissioner should be given authority to order the removal or the repair of such buildings so that they cease to be a fire menace.

6. In very few of the cities and towns of the Metropolitan District are there regulations on the construction of chimneys, or the installation of heating plants. The Fire Prevention Commissioner should be given authority to make rules and regulations on the construction of chimneys and upon the installation of heating plants, in order to reduce the number of chimney fires by the installation of cleanouts, and the number of building fires from overheated chimneys and defective heating plants.


7. In order to better protect the congested value districts of the cities and towns, authority should be given the Fire Prevention Commissioner to designate the location of unpierced fire walls, to require the installation of fire windows constructed with metal or metal-covered sashes and frames with wired glass, and the installation of automatic sprinklers in such buildings as may be located at the boundaries of certain zones or districts, which could be determined by the Commissioner after consultation with the mayors and boards of selectmen and the heads of the fire departments of the cities and towns. This is a matter of extreme importance to all cities and towns, and more

especially to a city like Boston, where there has been no attempt to place barriers so that the extent of a conflagration might be anticipated.



The late Commissioner, Mr. John A. O'Keefe, passed away on Jan. 18, 1918, after a few months' illness.

Mr. O'Keefe was by training and experience a lawyer and educator, and under his guidance the fire prevention work in the Metropolitan District of Massachusetts progressed rapidly and successfully. His relations with the local officials were very cordial, and consequently he held their entire confidence. Mr. O'Keefe served more than three years, with close application to the work.



APPENDICES.

APPENDIX I.

CITIES AND TOWNS IN THE METROPOLITAN FIRE PREVENTION DISTRICT.

The following is a list of the cities and towns included in the Metropolitan Fire Prevention District, with the population according to the census of 1915:—

CITIES.	
Boston,	745,439
Cambridge,	108,822
Chelsea,	43,426
Everett,	37,718
Lynn,	95,803
Malden,	48,907
Medford,	30,509
Melrose,	16,880
Newton,	43,113
Quincy,	40,674
Revere,	25,178
Somerville,	86,854
Waltham,	30,154
Woburn,	16,410
	1,369,887
TOWNS.	
Arlington,	14,889
Belmont,	8,081
Brookline,	33,490
Lexington,	5,538
Milton,	8,600
Reading,	6,805
Rockland,	7,074
Saugus,	10,226
Stoneham,	7,489
Watertown,	16,515
Wilmington,	2,330
Winchester,	10,005
Winthrop,	12,758
	143,800
Total population,	1,513,687

APPENDIX II.

MEMBERS OF THE FIRE PREVENTION DEPARTMENT IN THE METROPOLITAN DISTRICT.

FIRE PREVENTION DEPARTMENT FOR THE METROPOLITAN DISTRICT.

Commissioner, Frank Lewis.
Deputy Commissioner, Michael A. Murphy.
Secretary, Harry E. Lake.

HEADS OF FIRE DEPARTMENTS IN THE METROPOLITAN DISTRICT.

CITY OR TOWN.	Head of Fire Department.	Central Fire Station.
Arlington,	Chief Walter H. Peirce,	1003 Massachusetts Ave.
Belmont,	Chief John F. Leonard,	Leonard St.
Boston,	Commissioner John Grady,	40 Bristol St.
	Chief Peter F. McDonough,	Mason St.
	Senior Deputy John O. Taber,	Fort Hill Sq.
	Junior Deputy Daniel F. Sennott,	Winslow and Dudley sts., Roxbury.
District 1,	Wm. E. Riley,	Paris St., East Boston.
District 2,	Allan J. Macdonald,	Main St., Charlestown.
District 3,	Stephen J. Ryder,	Pittsburgh St., South Bos- ton.
District 4,	Edward J. Shallow,	Bulfinch St.
District 5,	Albert J. Caulfield,	Mason St.
District 6,	Frank Jordan,	Dorchester St., South Bos- ton.
District 7,	Peter E. Walsh,	Warren Ave.
District 8,	Wm. J. Gaffey,	Tremont St., Roxbury.
District 9,	Joseph H. Kenney,	Dudley St., Roxbury.
District 10,	Walter M. McLean,	Harvard St., Dorchester.
District 11,	Henry A. Fox,	Harvard Ave., Allston.
District 12,	Michael T. Mulligan,	Centre St., Jamaica Plain.
District 13,	Michael Kennedy,	Cor. Washington and Poplar sts., Roslindale.
District 14,	Maurice Heffernan,	Peabody Sq., Dorchester.
District 15,	Joseph A. Dolan,	Cor. Harvard Ave. and Win- throp St., Hyde Park.
Brookline,	Commissioner W. W. Estabrook,	340 Washington St.
	Chief Geo. H. Johnson,	340 Washington St.
Cambridge,	Chief James M. Casey,	Inman Sq.

HEADS OF FIRE DEPARTMENTS IN THE METROPOLITAN DISTRICT—Con.

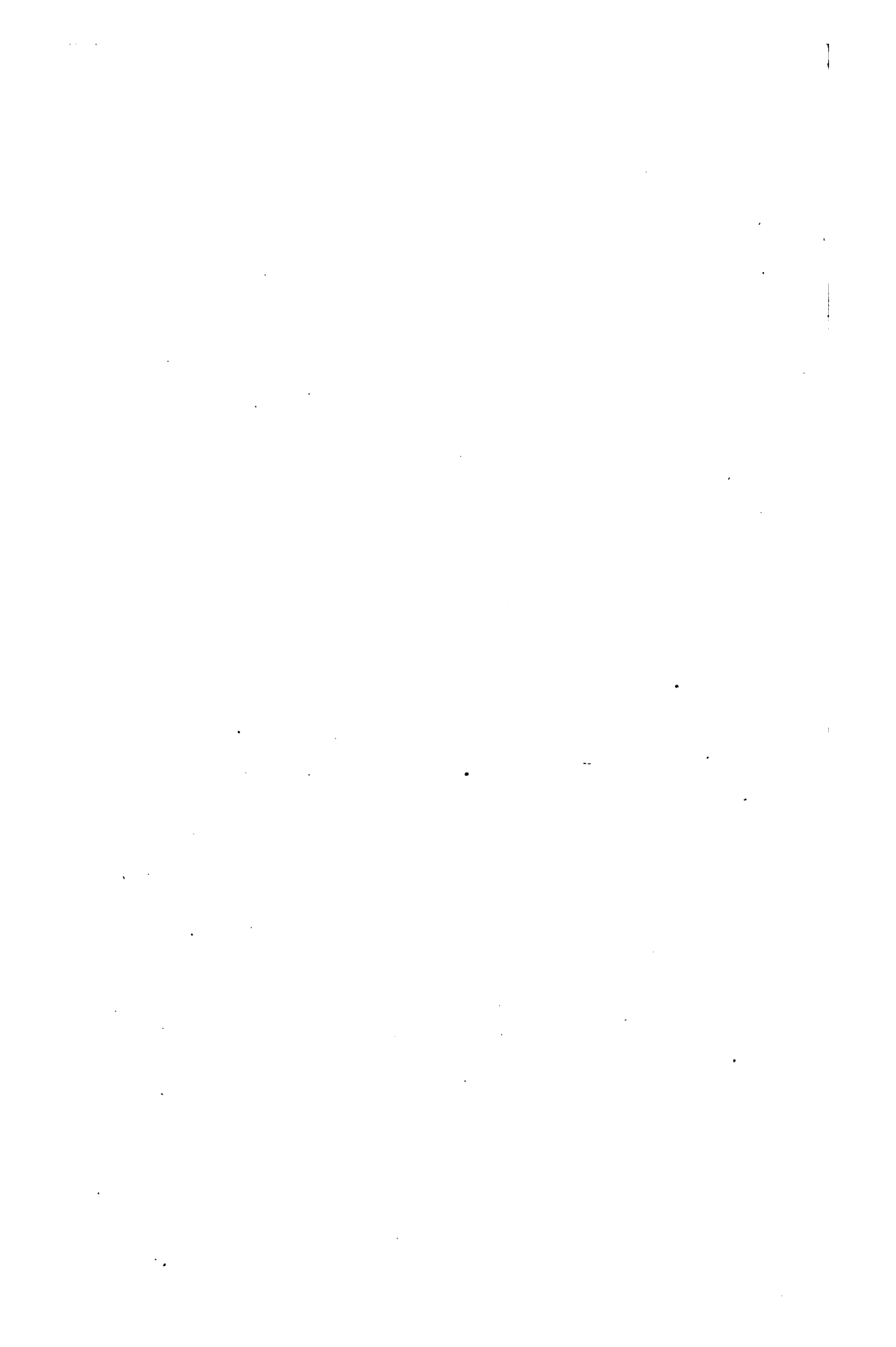
CITY OR TOWN.	Head of Fire Department.	Central Fire Station.
Chelsea,	Chief David M. Hudson, . . .	307 Chestnut St.
Everett,	Chief Joseph T. Swan, . . .	Broadway.
Lexington,	Chief Edward W. Taylor, . . .	5 Main St.
Lynn,	Chief Edward E. Chase, . . .	Broad St.
Malden,	Commissioner John H. Hannan, .	Mountain Ave.
	Chief John T. Nicolls, . . .	388 Main St.
Medford,	Chief Charles M. Bacon, . . .	1 South St.
Melrose,	Chief Joseph Edwards, . . .	576 Main St.
Milton,	Chief J. Harry Holmes, . . .	Danton Ave.
Newton,	Chief W. B. Randlett, . . .	27 Willow St.
Quincy,	Chief Faxon Billings, . . .	Quincy Ave.
Reading,	Chief O. O. Ordway, . . .	11 Pleasant St.
Revere,	Chief A. L. Kimball, . . .	Broadway.
Rockland,	Chief Fred Chapman, . . .	Union St.
Saugus,	Chief Ernest Stuart, . . .	Woodbury Ave.
Somerville,	Chief Sewall M. Rich, . . .	261 Medford St.
Stoneham,	Chief A. J. Smith, . . .	1 Tidd St.
Waltham,	Chief Geo. L. Johnson, . . .	Moody St.
Watertown,	Chief John W. O'Hearn, . . .	99 Main St.
Wilmington,	Chief Albert D. Butters, . . .	Church St.
Winchester,	Chief David H. DeCourcy, . . .	Mt. Vernon St.
Winthrop,	Chief J. B. Tewksbury, . . .	31 Pauline St.
Woburn,	Chief Frank E. Tracy, . . .	Winn St.

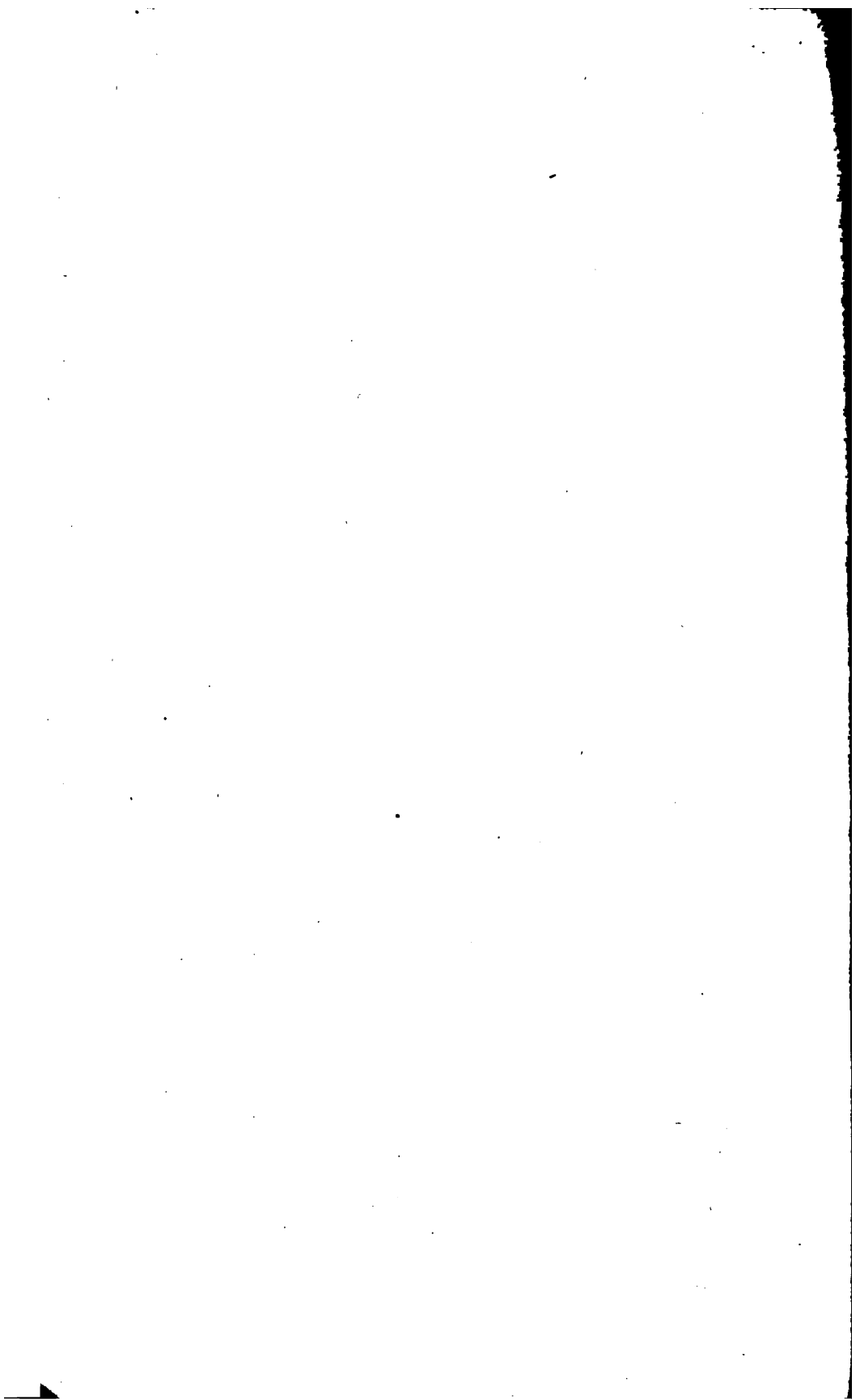
BUILDING COMMISSIONERS AND INSPECTORS IN THE METROPOLITAN DISTRICT.

Arlington,	William Gratto.
Belmont,	James R. Logan.
Boston,	Commissioner Herbert A. Wilson.
Brookline,	Commissioner E. Lyon.
Cambridge,	Jeremiah Downey.
Chelsea,	James C. Denning.
Everett,	George H. Wood.
Lexington,	William Gratto.
Lynn,	Dennis J. Dinneen.
Malden,	C. George W. Bagge.
Medford,	Frank B. Blodgett.
Melrose,	William S. Allen.

BUILDING COMMISSIONERS AND INSPECTORS IN THE METROPOLITAN
DISTRICT — Con.

Milton,	G. E. Burt.
Newton,	Commissioner Walter R. Forbush.
Quincy,	Warren S. Parker.
Reading,	Robert Parker.
Revere,	William H. Graham.
Rockland,	E. J. Fitzgerald.
Saugus,	Daniel Willis.
Somerville,	Commissioner Geo. L. Dudley.
Stoneham,	Albert Smith.
Waltham,	A. L. Cole.
Watertown,	Wm. H. Wilson.
Wilmington,	Herbert C. Barrows.
Winchester,	Maurice Dineen.
Winthrop,	F. L. Hodges.
Woburn,	Henry Macksey.





1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

Public Document



No. 107

FIFTH ANNUAL REPORT
OF THE
FIRE PREVENTION COMMISSIONER
FOR THE METROPOLITAN DISTRICT
MASSACHUSETTS

FROM AUGUST 1, 1918, TO AUGUST 1, 1919



BOSTON
WRIGHT & POTTER PRINTING CO., STATE PRINTERS
32 DERNE STREET
1919

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The Commonwealth of Massachusetts

TO HIS EXCELLENCY CALVIN COOLIDGE, *Governor of the Commonwealth of Massachusetts.*

SIR: — The Fire Prevention Commissioner for the Metropolitan District herewith submits his fifth annual report.

Very respectfully,

FRANK LEWIS,
*Fire Prevention Commissioner
for the Metropolitan District.*

AUG. 1, 1919.

FIRE PREVENTION COMMISSIONER FOR THE METROPOLITAN DISTRICT.

FIFTH ANNUAL REPORT.

RESULTS OF FIRE PREVENTION DURING 1918.

The general fire prevention work for the year has progressed along the lines which past experience has shown to be most effective. The results of the work are shown by the continued reduction in the number of fires with losses, the number of alarms, and the smaller comparative losses.

The accompanying tables show the reductions referred to above. In comparing the losses involved from year to year, it is necessary to consider the fluctuation of property values. The value of buildings as well as contents for the year 1918 was from 50 to 100 per cent. higher than in the preceding years. Since all losses are adjusted on the value at the time of the fire, fewer fires of lesser intensity will at the time of high prices produce as great or greater losses than the larger, more serious and more numerous fires would produce during normal prices.

In 1918 there were 44 fires in Boston where the loss exceeded \$10,000 each, with a total loss of \$1,976,000, as compared with 53 in 1917 with a loss of \$3,117,000, 38 in 1916 with a loss of \$1,364,000, and 47 in 1915 with a loss of \$1,787,000.

Although there was a decided increase in the number of alarms in the Metropolitan District in 1918 over 1916 and 1917, yet the number of fires where loss occurred was the smallest it has been for many years. By referring to the table, it will be

FIRE PREVENTION.

[Aug.

Losses and Per Capita Losses in the Metropolitan District for 1914, 1915, 1916, 1917 and 1918.

	Loss for 1914.	Per Capita Loss for 1914.	Loss for 1915.	Per Capita Loss for 1915.	Loss for 1916.	Per Capita Loss for 1916.	Loss for 1917.	Per Capita Loss for 1917.	Loss for 1918.	Per Capita Loss for 1918.
Arlington,	\$32,200	\$2 27	\$11,400	\$0 77	\$12,600	\$0 61	\$46,700	\$2 82	\$14,000	\$0 82
Belmont,	28,000	3 42	27,400	3 40	2,200	3 25	53,100	5 84	16,000	1 67
Boston,	3,044,600	4 16	3,003,200	4 03	2,473,000	3 25	4,056,400	5 23	2,827,300	3 58
Brookline,	45,600	1 41	21,000	0 63	6,700	19	23,600	66	31,500	3 85
Cambridge,	201,400	1 86	207,200	1 90	330,300	3 00	299,500	2 70	524,500	4 71
Chelsea,	153,400	3 73	132,500	3 05	154,500	3 39	87,300	1 83	148,700	2 97
Everett,	67,200	1 82	68,200	1 81	23,600	61	68,600	1 74	31,400	78
Lexington,	26,700	4 95	12,100	2 18	19,200	3 36	2,600	45	21,600	3 60
Lynn,	445,400	4 71	185,700	1 93	119,900	1 23	174,600	1 77	153,700	1 54
Malden,	89,300	1 64	49,700	4 49	47,700	97	63,600	1 25	35,000	1 68
Medford,	100,600	3 47	91,200	2 99	31,100	97	32,100	96	89,600	2 56
Melrose,	27,300	1 86	15,600	92	8,400	49	39,900	2 39	19,500	1 11
Milton,	29,800	3 61	20,300	2 36	6,600	76	6,600	74	6,400	71
Newton,	65,700	1 51	112,300	2 50	41,300	94	63,200	1 42	79,000	1 75
Quincy,	74,000	1 89	80,600	1 98	63,100	1 49	81,200	1 85	15,900	35
Reading,	4,900	1 85	10,900	1 60	56,100	7 20	16,900	1 92	6,400	65
Revere,	51,000	2 14	38,400	1 53	59,000	2 22	28,200	1 01	291,500	9 92
Rockland,	104,900	15 00	12,900	1 82	21,300	3 00	2,100	30	20,100	2 80
Saugus,	43,500	4 63	16,400	1 61	4,300	39	22,300	1 89	21,000	1 67
Somerville,	225,800	2 66	72,600	1 84	112,000	1 26	112,500	1 24	471,400	5 09
Stonham,	35,600	4 81	6,900	92	3,200	42	36,600	4 82	13,600	1 77
Waltham,	20,800	8 70	60,900	2 02	35,600	1 16	32,800	1 05	38,700	1 23
Watertown,	27,100	1 72	21,800	1 31	27,700	1 61	44,700	2 56	27,300	1 46
Winchester,	6,900	1 70	8,900	88	4,900	48	30,400	2 85	12,100	1 16
Wintthrop,	17,100	5 97	30,700	2 41	76,300	5 73	13,200	96	3,800	27
Woburn,	96,900	5 97	311,500	13 90	168,500	10 10	54,300	3 21	43,300	2 53
Metropolitan District,	\$5,063,700	\$3 42	\$4,799,900	\$3 17	\$3,909,100	\$2 53	\$5,493,000	\$3 47	\$4,963,400	\$3 05
Massachusetts outside of Metropolitan District,	\$21,130,600	-	\$4,894,000	\$2 24	\$5,870,000	\$2 65	\$6,172,000	\$2 75	\$7,022,000	\$3 18
Metropolitan District outside of Boston,	\$2,019,100	\$2 70	\$1,797,000	\$2 35	\$1,436,100	\$1 83	\$1,436,600	\$1 78	\$2,136,100	\$2 57

noted that the number of such fires has decreased gradually from 4,169, in 1914, to 3,099, in 1918, a very remarkable and significant result. Outside the Metropolitan District there was a reduction from 4,260, in 1914, to 3,715, in 1918, a reduction of 12.8 per cent as compared with 25.7 per cent in the Metropolitan District.

Aside from the large increases in loss due to big fires in Cambridge and Somerville, the losses in the Metropolitan District compare favorably with the reduced losses of recent years.

Total Alarms.

	1915.	1916.	1917.	1918.
Arlington,	107	96	125	187
Belmont,	53	42	53	90
Boston,	5,542	4,572	4,785	5,174
Brookline,	312	261	291	350
Cambridge,	709	696	699	712
Chelsea,	533	502	414	455
Everett,	291	243	286	347
Lexington,	140	77	93	128
Lynn,	1,061	915	1,016	1,022
Malden,	399	274	314	327
Medford,	422	260	325	391
Melrose,	203	119	179	200
Milton,	148	122	167	187
Newton,	747	460	542	725
Quincy,	493	221	378	498
Reading,	125	101	95	89
Revere,	302	264	270	366
Rockland,	44	44	37	86
Saugus,	105	87	109	123
Somerville,	633	476	410	674
Stoneham,	55	37	63	76
Waltham,	299	202	281	325
Watertown,	148	138	123	202
Winchester,	117	115	96	119
Winthrop,	155	90	118	120
Woburn,	172	154	167	209
Total,	13,315	10,568	11,436	13,180

Number of Fires causing Losses, excluding Alarms where no Loss followed.

	1914.	1915.	1916.	1917.	1918.
Arlington,	35	23	18	33	29
Belmont,	9	13	10	15	16
Boston,	2,301	2,229	1,855	1,936	1,760
Brookline,	37	42	45	48	41
Cambridge,	264	262	226	225	169
Chelsea,	258	263	180	155	159
Everett,	61	64	44	46	55
Lexington,	10	14	8	3	12
Lynn,	319	242	193	210	171
Malden,	152	139	103	74	60
Medford,	63	57	52	67	64
Melrose,	40	25	19	33	26
Milton,	16	13	14	22	16
Newton,	110	113	87	94	91
Quincy,	84	85	44	48	50
Reading,	13	14	16	13	11
Revere,	68	66	59	92	81
Rockland,	14	10	11	8	18
Saugus,	25	29	14	19	30
Somerville,	109	122	109	104	90
Stoneham,	26	21	18	21	11
Waltham,	47	61	50	63	56
Watertown,	31	29	36	17	24
Winchester,	27	20	21	14	12
Winthrop,	25	33	18	24	22
Woburn,	25	36	38	28	25
Totals, Metropolitan District.	4,169	4,025	3,288	3,412	3,099
Totals, Massachusetts outside of Metropolitan District.	4,260	4,005	3,813	3,781	3,715

Even with these increases the per capita loss for the Metropolitan District was not as great as in 1914, 1915 or 1917, while outside the Metropolitan District the per capita loss was larger than any of the four years shown in the table. The general trend of the losses is evident from an examination of the per capita losses for each city and town for the past five years.

PREVENTION AND LIMITATIONS OF FIRES.

For over a year the work of the Fire Prevention Commissioner has been seriously hampered by the great increase in the cost of materials and equipment. At such high prices, only the minimum requirements can be considered, thus lowering the general character of the structures. Changes in existing buildings which represent very definite fire hazards can be obtained only in a few instances because of the limitations of the Commissioner's powers to order changes involving more than 5 per cent of the assessed valuation or to exercise any jurisdiction whatsoever by reason of the particular kind of occupancy.

During the past year 30 orders were issued for automatic sprinklers in buildings, with a result that 8 buildings have been equipped throughout and 4 buildings partially protected. There are pending 13 orders for complete and 5 orders for partial systems.

CONTROL OF EXPLOSIVES IN 1918.

The handling and use of explosives during the past year have been without accident, and the storage under guards has prevented the theft of them for illegal purposes. This spring the guard service has been discontinued for some of the better type magazines where suitable locks have been provided. The same care has been exercised by the local officials and the explosive dealers to see that explosives were delivered for legitimate purposes only.

FIREWORKS.

As there seemed to be the general belief among the local authorities that such fireworks and firecrackers as are permitted by law and the regulations should be allowed to be discharged this year on the 17th of June and the 4th of July, the war restrictions were removed. Although there were a number of small fires and accidents, some of which were fatal, yet the results were comparable with the safe and sane Fourth of recent years. Authority is specifically given each city and town to prohibit by ordinance or by-law the sale and use of fireworks and firecrackers, but no such ordinance or by-law has been adopted.

WATER-FRONT CONDITIONS IN BOSTON.

No explosives which are not under the control of the United States government are allowed to be transported through the city of Boston nor stored within the city unless for use therein. Inflammable fluids are used pretty generally by the boats and vessels in the harbor and about the docks without regulation, except that deliveries are made to them only from authorized stations, which are isolated.

A license was issued recently for the installation of an approved supply station, to be located on the breakwater near the fish pier. Such a station will greatly reduce the hazard from that of the supply boats anchored in the vicinity, as the storage will be buried underground on the shore.

GARAGES.

This summer, after four years' trial, the regulations on garages adopted in 1915 have been revised to make them consistent with modern construction and the new methods of conducting the business. They are now in a simplified form and represent minimum requirements consistent with the safety of the adjoining property.

Most of the existing garages which represented serious fire and even conflagration hazards have been properly safeguarded, and it is expected that all such garages will be in reasonably good condition by the end of this year.

ENGINEERING DIVISION.

Last fall the necessity of approving plans and layouts for public garages, dry cleansing establishments, fuel oil installations, oil storage plants and many allied industries was so urgent that an engineer was engaged with the approval of the Governor and Council, and since that time this work has been so important and so great that a second engineer has been employed a large part of the time to handle the special problems which are continually arising.

This department has proved to be one of great service since it provides for the approval once and for all of each proposition,

thus saving much time and expense from alterations which would otherwise have to be made after a plant had been completed.

The department was very fortunate in obtaining the services of Mr. Carl Stuetzel, Jr., formerly supervisor of plans with the Boston Building Department, as an engineer. Mr. Stuetzel has done very efficient work for the department since his engagement last fall.

In October last Mr. Harry E. Lake, who had devoted his entire time and energy as secretary and engineer to the department from the time of its organization in 1914, resigned in order to be of greater assistance to the government during the war, and became associated with the National Board of Fire Underwriters by whom he was assigned to the Bureau of Yards and Docks, Navy Department, Washington, D. C., as an advisory engineer on fire protection. Since Mr. Lake completed his duties at Washington he has been engaged on special engineering work for the department.

To fill the position of secretary made vacant by Mr. Lake's resignation, Mr. Everett W. Shumway was appointed Oct. 7, 1918.

SMOKING IN WAREHOUSES.

Since the adoption of the regulation on smoking in warehouses, no fire from this cause has been reported in such a building. Although this was a war measure, yet, up to the present time, no request has been received to discontinue the regulation.

HAZARDS OUTSIDE THE CONTROL OF THE COMMISSIONER.

In the last annual report, certain perfecting amendments to the fire prevention statute were recommended, but negative action was taken by the Legislature. It is to be hoped that the coming year will see these extremely important amendments adopted in order that the Commissioner may exercise the authority anticipated by the fire prevention statute.

From Jan. 1, 1918, to Jan. 1, 1919, taking into account fires in the city of Boston where the loss was \$10,000 or more, a loss of \$380,000 occurred in buildings within the jurisdiction of the Commissioner; a loss of \$1,300,000 occurred in buildings

not within his control; and in buildings where his authority is limited by the provision that four or more persons must live or be employed above the second floor, the loss in such fires amounted to \$820,000.

LEGISLATION RECOMMENDED.

Below is given a copy of Senate Bill No. 154 of 1919, which should be enacted the coming year. The necessity of such perfecting amendments is stated on pages 16-19 of the fourth annual report of this department.

AN ACT RELATIVE TO THE BETTER PREVENTION OF FIRES THROUGHOUT THE METROPOLITAN DISTRICT.

Be it enacted, etc., as follows:

SECTION 1. Section seven of chapter seven hundred and ninety-five of the acts of nineteen hundred and fourteen is hereby amended by inserting the words:— or buildings or structures thereon,— after the word “lot”, in the second line,— so as to read as follows:— *Section 7.* No part of any building used for habitation, nor that part of any lot or buildings or structures thereon within fifty feet of any building so used, shall be used for the storage, keeping or handling of any combustible article for other than domestic purposes, or of any article or material that may be dangerous to the public safety as a fire menace, unless a permit has first been obtained therefor from the commissioner. No part of any such building shall be used as a carpenter’s shop nor for the storage, keeping or handling of feed, hay, straw, excelsior, shavings, sawdust, cotton, paper stock, feathers, or rags, except under such terms and conditions as the commissioner may prescribe.

SECTION 2. Section twenty-seven of chapter seven hundred and ninety-five of the acts of nineteen hundred and fourteen is hereby amended by inserting after the word “act”, in the second line, the words:— or any rules or regulations made hereunder,— so as to read as follows:— *Section 27.*— Except as is otherwise hereinbefore provided, any person violating any provision of this act, or any rules or regulations made hereunder, shall be guilty of a misdemeanor and liable to a fine of fifty dollars for each offence, or, in case of a continuing offence after a notice of such violation, to a fine not exceeding ten dollars for every day during which the violation continues.

SECTION 3. Section ten of chapter seven hundred and ninety-five of the acts of nineteen hundred and fourteen is hereby amended by striking out after the word “or”, in the third line, the words “for the business of”, and inserting in place thereof the words:— “tailoring, or any such building within which persons are engaged in”,— and by striking out after the

word "sprinklers", in the sixteenth line, the words "that no such order shall apply to any building unless four or more persons live or are usually employed therein above the second floor", — so as to read as follows: —

Section 10. Any building within the metropolitan district used in whole or in part for the purpose of woodworking or tailoring, or any such building within which persons are engaged in manufacturing or working upon wooden, basket, rattan, or cane goods or articles, or tow, shavings, excelsior, oakum, rope, twine, string, thread, bagging, paper, paper stock, cardboard, rags, cotton or linen garments or goods, or rubber, feathers, paint, grease, soap, oil, varnish, petroleum, gasoline, kerosene, benzine, naphtha, or other inflammable fluids, and any buildings in the metropolitan district used in whole or in part for the business of keeping or storing any of such goods or articles, except in such small quantities as are usual for domestic use, or for use in connection with and as incident to some business other than such keeping or storing, shall, upon the order of the commissioner, be equipped with automatic sprinklers.

SECTION 4. Section one of chapter two hundred and eighty of the acts of nineteen hundred and five, as amended, is hereby further amended by inserting after the word "inflammable", in the eleventh line, the words: — gases or, — and by inserting after the word "compounds", in the twelfth line, the words: — or other gases, fluids, or compounds, which may become dangerous to the public safety as a fire or explosion menace, — so as to read as follows: — *Section 1.* The powers and duties heretofore conferred and imposed upon cities and towns and the mayors and aldermen, city councils and selectmen thereof, by chapter one hundred and two of the Revised Laws, to regulate the keeping, storage, use, manufacture, sale, handling, transportation or other disposition of gunpowder, dynamite, crude petroleum or any of its products, or explosive or inflammable gases, or fluids or compounds, or other gases, fluids or compounds, which may become dangerous to the public safety as a fire or explosion menace; tablets, torpedoes, or any explosives of a like nature, or any other explosives, except fireworks and fire crackers, are hereby conferred and imposed upon the detective and fire inspection department of the district police, except as to the transportation of said explosives by steam railroads.

SECTION 5. The fire prevention commissioner for the metropolitan district, immediately upon being informed by report or otherwise that a building or other structure or anything attached or connected therewith in any city or town is specially unsafe in case of fire, may inspect the same; and if it appears to him to be specially unsafe in case of fire, he shall first in writing notify the owner or agent or any person having an interest therein to remove it or make it safe in case of fire. The fire prevention commissioner for the metropolitan district may affix in a conspicuous place upon the exterior walls of the building a notice of its unsafe condition, which notice shall not be removed or defaced without authority from him. Whoever is so notified shall be allowed until twelve o'clock

noon on the day following the service of the notice in which to begin the work of making such building safe in case of fire or of removing such structure, and he shall employ sufficient labor speedily to make it safe or remove it; and such owner or interested person shall for every day's continuance of refusal or neglect to make said building safe or to remove the same, after being so notified, forfeit to the city or town in which the structure is located not less than ten dollars nor more than fifty dollars.

SECTION 6. Section thirteen of chapter seven hundred and ninety-five of the acts of the year nineteen hundred and fourteen is hereby amended by inserting after the letter "H", in the thirty-third line, the words:— Regulating the method of construction of chimneys, the installation of heating plants, and, — and by adding after the forty-seventh line the following new paragraphs:— N. Requiring the installation of automatic sprinklers in such buildings as may be located at the boundaries of fire zones or districts, which said boundaries shall be determined by the commissioner after consultation with the mayors and the heads of fire departments of cities and boards of selectmen and the heads of fire departments of towns. O. Designating the location of unpierced fire walls. P. Requiring the installation of fire windows, constructed with metal or metal covered sashes and frames with wired glass, — so as to read as follows:— *Section 13.* In addition to the powers given by sections one to twelve, inclusive, the commissioner shall have power to make orders and rules relating to fires, fire protection and fire hazard binding throughout the metropolitan district, or any part of it, or binding upon any person or class of persons within said district, limited, however, to the following subjects:—

A. Requiring the keeping of portable fire extinguishers, buckets of water or other portable fire extinguishing devices on any premises by the occupant thereof, and prescribing the number and situation of such devices.

B. Prohibiting or regulating the accumulation, and requiring the removal, of combustible rubbish, including waste paper, cardboard, string, packing material, sawdust, shavings, sticks, rags, waste leather and rubber, boxes, barrels, broken furniture and other similar light or combustible refuse.

C. Prohibiting or regulating the setting or burning of fires out of doors.

D. Causing obstacles that may interfere with the means of exit to be removed from floors, halls, stairways and fire escapes.

E. Ordering the remedying of any condition found to exist in or about any building or other premises, or any ship or vessel in violation of any law, ordinance, by-law, rule or order in respect to fires and the prevention of fire.

F. Causing any vessel moored to or anchored near any dock or pier to be removed and secured in some designated place: *provided*, that such vessel is on fire or in danger of catching fire, or is by reason of its condition or the nature of its cargo a menace to shipping or other property.

G. Requiring and regulating fire drills in theatres, public places of amusement, and public and private schools.

H. Regulating the method of construction of chimneys, the installation of heating plants, and requiring the cleaning of chimney flues and vent pipes.

I. Requiring proper safeguards to be placed and maintained about or over roof skylights.

J. Prohibiting or regulating smoking in factories, workshops and mercantile establishments.

K. Requiring that all signs and advertising devices erected on buildings shall be approved by said commissioner.

L. Causing to be made public all violations of fire prevention laws by posting placards on buildings or premises, and by publishing in the daily newspapers the names of the owners and specifying the buildings in which the violation occurs.

M. Defining the classes of buildings to be equipped with sprinkler protection under the authority of this act.

N. Requiring the installment of automatic sprinklers in such buildings as may be located at the boundaries of fire zones or districts, which said boundaries shall be determined by the commissioner after consultation with the mayors and the heads of fire departments of cities and boards of selectmen and the heads of fire departments of towns.

O. Designating the location of unpierced fire walls.

P. Requiring the installation of fire windows, constructed with metal or metal covered sashes and frames with wired glass.

SECTION 7. Section twenty-two of chapter seven hundred and ninety-five of the acts of nineteen hundred and fourteen is hereby amended by striking out the words "in such cases", in the seventh and eighth lines, and inserting in place thereof the words: — in all cases where such rules or orders require the making of additions to or changes in the premises themselves, such as would immediately become real estate and be the property of the owner of the premises, — so as to read as follows: — *Section 22.* In any case where buildings or other premises are owned by one person and occupied by another under lease or otherwise, the orders of the commissioner shall apply to the occupant alone, except where such rules or orders require the making of additions to or changes in the premises themselves, such as would immediately become real estate and be the property of the owner of the premises. In all cases where such rules or orders require the making of additions to or changes in the premises themselves, such as would immediately become real estate and be the property of the owner of the premises, the rules or orders shall affect the owner and not the occupant, and, unless it is otherwise agreed between the owner and the occupant, the occupant whose use of the premises has caused the making of such additions or changes, in addition to his rent or other payments shall, after the addition or changes are made, pay a reasonable per cent. of the cost thereof annually to the owner of the prem-

ises. No rule or order shall be made or enforced which requires an expenditure by the owner or occupant of more than five per cent of the last annual assessed valuation of the land and buildings to which such rule or order relates.

Since the consolidation of the department, to take effect December 1 next, will place the administration of nearly all the powers conferred by chapter 795 of the Acts of 1914 under one State department for the entire State, the other provisions of the act should be extended to apply also throughout the State.

FIRE PREVENTION DAY.

October 9, the anniversary of the Chicago fire of Oct. 9, 1871, has come to be pretty generally observed throughout the country as Fire Prevention Day, but last year, because of the activities of the United States government, November 2 was the day fixed.

For the past three years a day has been set aside in Massachusetts, by proclamation of the Governor, for the purpose of thinking and talking fire prevention. The preparations and results of last year's observance were much more extensive than in previous years.

On the eve of Fire Prevention Day the annual test of the water curtains on the Filene Building, Washington Street, Boston, was made, and following the successful test a banquet was given the fire chiefs of the Metropolitan District and representatives of insurance and allied associations, after which a parade, consisting of the fire chiefs and representatives, fire apparatus, marching clubs and Boy Scouts, assisted by bands and cadet musicians of the parochial schools, was escorted to the National Theatre, where addresses and appropriate films emphasized the significance of fire and accident prevention.

On the afternoon of Fire Prevention Day an impressive and instructive demonstration of fire apparatus was given at Post Office Square by the Boston Fire Department.

It was rather unfortunate, so far as the school work was concerned, that Saturday should have been chosen for the day of observance, but exercises, consisting of talks and demonstra-

tions by members of the fire departments, were held in most of the schools of the Metropolitan District on Friday, November 1.

As in the past, notices were sent to factory managers requesting them to investigate the means of egress and fire hazards in their factories and to remedy any dangerous conditions found to exist. A large number of factory fire cards were distributed throughout the Metropolitan District.

FUTURE OF FIRE PREVENTION.

Even with the strenuous opposition to the enforcement of the fire prevention statutes, the work has progressed, and progressed rapidly. Such enforcement has created many hardships on property owners, especially those who had control of the poorer class of property rented for hazardous businesses where the need for fire prevention was greatest.

Much discretion has been shown in the administration of the law in order to prevent the abandonment or liquidation of property which would in many cases have taken away the income from persons dependent upon it or forced the immediate sale at great loss.

Nevertheless much has been accomplished in the five years' trial, which is summarized, in brief, below, as this year will be the last of the fire prevention work under a separate department devoted to the cause and this the last annual report of the Fire Prevention Commissioner. Chapter 350 of the General Acts of 1919, known as "An Act to organize in departments the executive and administrative functions of the Commonwealth," provides that the fire prevention work shall be carried on by a State Fire Marshal, who will be a director under the control of the Commissioner of Public Safety.

Such a consolidation should give an equitable administration of the laws and a more uniform code should result. Certainly fire prevention is an extremely necessary public function, and the results should be manifested in the improved welfare and happiness of the people. The results already obtained would be more generally realized if it were not for the unrest that permeates the whole world, concealing progress and emphasizing the unavoidable evils of good government.

FIVE YEARS OF FIRE PREVENTION IN MASSACHUSETTS, UNDER
CHAPTER 795 OF THE ACTS OF 1914.

After several years of agitation on the part of public-spirited citizens, the department of the Fire Prevention Commissioner was organized in the fall of 1914. With little co-operation and severe criticism, the department started on a progressive growth, which it has maintained throughout its existence. The results, which could be plainly foreseen by the promoters, were so unapparent during the early stages that the accomplishments have been attained only by constant application on the part of the untiring officials and employees of the department. It is with great pleasure and gratitude that I record the following results of five years of fire prevention in this State.

In 1914 the Metropolitan Fire Prevention Department consisted of twenty-two cities and towns about and including Boston. Since then six towns have accepted the provisions of the act.

From the outset it was evident that the work must be carried on in two divisions, viz., educational and constructional, the former being the more important.

Educational Work.

The educational work has been by far the most effective but unfortunately the less evident. It has been conducted along the following lines: —

1. Addresses.
2. Conferences.
3. Publicity: newspapers and circulars.
4. Schools.
5. Special meetings.

Many addresses have been delivered before labor unions, civic and religious societies, lodges, clubs, business meetings, schools and like assemblies, and much information has been spread through such addresses.

Many conferences have been held with representatives of the various trades interested in the particular subject under consideration. The results of such conferences can be appreciated from the following example.

When the garage regulations were prepared, and before they were adopted, a conference was held with representatives of the garage owners at which their suggestions were noted and modifications of the regulations made to meet the valid objections. Afterwards conferences with the fire chiefs and building inspectors were held and the regulations modified to meet the local conditions. It is evident that regulations made in this manner must necessarily be practicable, and that they were is shown by the fact that they were in effect over four years without amendments, except of a very minor character. The same can be said of all regulations adopted by the department.

Through the medium of the newspapers, which have always been public spirited and anxious to spread educational information, and that of circulars and booklets, mailed, posted and distributed by the school children, cautions have been so emphasized that the impressions will last for years to come.

Many circulars and pamphlets have been distributed among the school children as well as teachers, and from time to time special exercises have been held in the schools along fire prevention lines. Much credit is due the superintendents of schools and members of the fire departments for their efforts in teaching fire prevention. From time to time fire drills have been held by representatives of the department, and to meet the requirements systematic drills have been established in nearly all the schools by the principals in charge.

Besides the general conferences, there have been special meetings, such as that held on Fire Prevention Day last year, which have helped to keep up the interest in the subject. As the result of one special meeting, the general conditions and fire protection in all schoolhouses throughout the district have been greatly improved; of another, the ordinances prohibiting the use of the wooden shingles, because of the flying firebrand hazard, were adopted in nearly half of the cities and towns of the district.

Constructional Work.

At the outset it was imperative that regulations should be adopted at once governing the important industries in which serious fires would probably occur, in order that the local officials, through whom the work of the Fire Prevention Commis-

sioner must be conducted, might be guided in the exercise of their delegated powers.

Regulations were established as follows:—

Out-of-door fires,	Nov. 15, 1914
Delivery of gasoline to boats and vessels,	Jan. 1, 1915
Revised,	March 31, 1916
Signs and advertising devices,	Feb. 17, 1915
Motion-picture films,	March 5, 1915
Revised,	Jan. 15, 1916
Volatile inflammable fluids and garages,	April 1, 1915
Revised,	July 22, 1915
Minor amendment, garages,	April 17, 1916
Minor amendment, garages,	Aug. 30, 1916
Definition of fire limits in Revere,	Aug. 1, 1917
Revised, garages,	June 1, 1919
Fireworks,	June 4, 1915
Paints and oils,	Nov. 15, 1915
Explosives,	May 15, 1916

Approval of Plans and Construction.

Since the establishment of the regulations it was found that there was not the uniformity of application that was expected, and therefore it was necessary to establish an engineering department. This department now passes on all garages with a capacity exceeding four automobiles, outside of Boston; oil storage and fuel oil systems; dry cleansing and dyeing plants; acetylene gas and oxygen plants; motion-picture film exchanges; and, in fact, all factories, warehouses and buildings or structures wherein large quantities of inflammable fluids or compounds are manufactured, stored, kept or used.

Besides the regular propositions coming before the engineering department, there are many special cases on which decisions are given. This department not only passes on the plans, but also approves the work. The question of strength of materials is left with the local building departments.

Removal or Protection of Hazardous Occupancies.

Many hazardous industries were forced to relocate away from congested value districts, so that many conflagration areas have been eliminated. Other such industries have been required to

relocate in better types of buildings or protect their plants with automatic sprinklers.

In the city of Boston there have been 163 buildings equipped throughout and 101 partially equipped with automatic sprinklers upon order of the Commissioner, and there are now pending 45 orders for complete equipments and 21 for partial systems. The total number of buildings in Boston which are protected by systems of automatic sprinklers approved by the Boston Board of Fire Underwriters is 883, of which 264 have been so protected through the efforts of this department.

Between Jan. 1, 1915, and Jan. 1, 1919, there were in the city of Boston 182 fires where the loss exceeded \$10,000 each, with a total loss of \$8,244,000, as compared with a total of 7,780 fires, with a total loss of \$12,359,000, that is, $2\frac{1}{2}$ per cent. of the fires represented about 67 per cent. of the loss. Between Jan. 1, 1916, and Jan. 1, 1919, the loss from such fires was \$6,457,000. Of this loss, only \$1,550,000 occurred in buildings in which the Commissioner had sprinkler jurisdiction; \$4,570,000 occurred in buildings where he had no jurisdiction by reason of the nature of occupancy, and \$3,370,000 occurred in buildings where there were not four or more persons living or usually employed above the second floor.

Portable Extinguishers.

Many orders have been issued to provide portable extinguishers in buildings where protection from such equipment would be of value. For the protection of many hazardous businesses such equipment is required by the regulations.

Maintenance.

The accumulation and disposal of rubbish represent the greatest problem in fire prevention. Not only is there lack of care on the part of the owners of buildings in making proper arrangements for the disposal of such material, but there is also lacking the individual responsibility on the part of tenants and employees to use the available equipment in a proper manner, if at all.

An inspection may reveal the existence of materials subject to spontaneous combustion in large quantity in a cellar near a

vertical combustible shaft, so that a fire would mushroom out on each floor of the building. The janitor, if there is one, is told to remove the same. An order is issued on the owner to have the rubbish removed. After three or four days the rubbish is removed and the order complied with. Another inspection is made a week after the first one and the conditions are as bad or worse than before.

In order to overcome the evils of the present system, there should be a fine established for not properly disposing of waste material, which fine would result in the establishment for each building, of a definite plan for the removal of rubbish. Nearly all cities and towns have regular collection days for rubbish, so that all successful plans, if the public collection is to be depended upon, will have to be based on such a schedule. All refuse should be collected at least once a day, oftener if necessary, and placed in proper metal covered containers, baled and the bales stored in a fireproof room, or removed to a safe place outside the building. At night the premises should be left clean and free from all such material unless it is so kept that it cannot cause or increase a fire.

Paint Stores or Shops located in or near Dwellings.

Under section 6 of the fire prevention statute, regulations were adopted on paint stores and paint shops, and all such premises reported by the local officials have been provided with proper fireproof rooms in which to keep the paints and oils which are in bulk.

Salamanders.

Section 9 of the statute provides for the safe use of salamanders. After several prosecutions, the number of fires from such a cause has been very materially reduced.

Egress.

Although provisions for egress from buildings are well taken care of by the local officials, yet many cases of blocked or faulty stairways or fire escapes have been corrected by this department.

Fire drills have been established in most theatres and public

schools and in a majority of private schools. Many fire drills have been called for by members of the department and bad practices eliminated, so that the drills to-day are well standardized.

Fire Protection in Stables for Horses and Mules.

Since the passage of chapter 158, General Acts of 1916, most of the stables where horses and mules were kept above the first floor have been provided with second runway, protected with automatic sprinklers, or abandoned for such use above the first floor.

Of a total of 218 such stables reported by the local officials, 210 are now in compliance with the above-mentioned statute. The loss of life of horses and mules from fire during the past two years was very small and much less than in previous years.

Chimney Flues and Vent Pipes.

Although no authority is given the Commissioner over structural features of chimneys, yet many chimneys have been repaired after causing small fires. The chimneys as constructed to-day do not afford any practical means of determining their condition. All chimneys should be provided with a cleanout at the bottom.

The removal of soot from chimneys and vent pipes is very important, but there are not the facilities at present to see that they are properly attended to. Many chimney fires occur each year, and in all cases the chimneys are cleaned after the fire or required immediately to be cleaned. The examination of chimneys and vent pipes which have no cleanouts by the inspectors is not practicable.

Smoking in Factories, Workshops and Mercantile Establishments.

The question of prohibiting smoking in factories, workshops and mercantile establishments was taken up before representatives of such establishments and before representatives of the labor unions and it was the unanimous opinion that a general prohibition would be the cause of more serious fires than the

general practice of smoking, because employees would smoke in unfrequented places where a fire would gain considerable headway before being detected.

There are, of course, certain businesses where smoking or the use of matches, sparks or open flames would be dangerous, and in such occupancies smoking is prohibited by regulation.

As smoking has become a general habit among all classes of people, the most plausible means of preventing fires from such a cause in an unprotected building having inflammable contents appears to be the setting aside of a suitable room for the purpose; such a room might also be used as a locker and rest room.

Signs and Advertising Devices on Buildings.

Although all new signs and advertising devices on buildings are erected under regulation of this department, yet there has been no attempt to make all existing signs structurally safe. Many signs exist to-day on the roofs of buildings in all stages of deterioration, and occasionally a sign is precipitated by a strong wind to the street because of the failure of the wooden supports. A general periodic inspection should be made of all signs and advertising devices on buildings in order to require them to be kept in proper condition.

Statistics.

From the beginning records of fires have been kept in accordance with sections 19 and 20 of the fire prevention statute. Because of the number of fires and the congested values in Boston, the reports are received from the fire department without values, except the estimated losses, while, outside of Boston, the reports are made with complete figures. The figures for the Boston reports are obtained as far as possible from reports from the insurance companies and the losses finally checked with the figures of the Boston Protective Department, to which department is due full credit for all published statistics on Boston fire losses. The reports for the cities and towns outside of Boston are all checked with the insurance reports and corrected when necessary.

These corrected reports are all on file in the office in card index form as well as the insurance reports. Most of the insurance reports are made by the Actuarial Bureau of the National Board of Fire Underwriters from reports received by that bureau from the adjusters. The companies which do not report to the Actuarial Bureau are supposed to report directly to the department, but complete reports are not received because of the number of foreign and other companies with headquarters outside of the State from which the difficulties of obtaining the reports is very great.

The Actuarial Bureau is doing excellent work in collecting statistics on fire losses, and the reports from the bureau have been very satisfactory.

From the reports a card index is kept of the owners of property and occupants on whose premises fires occur, so that the number of fires and losses of an owner or occupant are available.

All statistics quoted in the annual reports of the department have been taken from the reports of the District Police in order that the comparisons would be made on the same basis. There are numerous losses which are adjusted by the insurance companies which are not reported to the District Police and of which no record is made in their reports either as to number of fires or as to losses. In comparing the causes of fires, all fires should be considered, so that the statistics will fairly represent the conditions as they exist. Although the loss involved in such fires does not represent a large per cent of the total loss, yet the number of fires would have a big influence on the causes, unless it could be assumed that the same ratio exists between the causes of such fires and those for which the statistics are now given, which undoubtedly would not be the case. In 1918 there were reported in Boston 1,585 such fires, representing a total loss of \$83,000. The total number of fires not including this type of fires in Boston for 1918 was 1,760, and the total loss exclusive of that for such fires was \$2,830,000, so that there were not recorded in 1918 47 per cent of the number of fires with loss and $3\frac{1}{2}$ per cent of the loss due to such fires.

The tabulations given in Appendices IV and V have been made from published records, and are extremely interesting and instructive. They show averages taken over a period of years, for both the occupancies and the causes of fires. The percentages and average per fire indicate in general how effective fire prevention should be conducted.

Statistics are of great value if properly interpreted and misleading unless thoroughly understood. The utmost care should be used in quoting from tables.

Administration.

It was recognized from the beginning that the fire prevention work must be administered fairly to all without regard to political or friendly influence, and that has been the continued policy of the department. All decisions have been rendered free from prejudice and influence and according to the best judgment of the Commissioner, taking into consideration all the facts in the case.

Sections 4 and 19 of the fire prevention statute place a great deal of responsibility and work upon the local departments, without providing a means of performing such duty. All of the fire departments are limited to the minimum number of men, who are required to be at their stations ready for alarms, and, therefore, the investigations must be done by the officers of the departments, who are already overtaxed with duties and responsibilities. For five years the Commissioner has endeavored to obtain through the Legislature permission to employ inspectors or investigators to work in co-operation with the local officials, but such authority has been denied with the suggestion that the present system should be given a fair trial. Certainly a fair trial has been given, and it is the opinion of the local officials as well as of the Commissioner that for the Metropolitan District there should be at least six men trained in particular branches of the work in order to satisfactorily and efficiently carry out the functions of the department.

The local officials, and especially the members of the fire and building departments, have performed willingly and with great credit to themselves the additional duties required of them by the Commissioner. Without their assistance the department

would have been of very little value to the people. However, without the department of fire prevention there would not be the co-operation between the local departments nor the uniformity of administration and enforcement of the law that now exists.

There can be little doubt but that the Department of Public Safety, which will succeed in the exercise of the powers and obligations of the department, will be better equipped and will receive better support from the public, so that even greater results can be expected within the next few years along fire prevention lines.

APPENDICES.

APPENDIX I.

CITIES AND TOWNS IN THE METROPOLITAN FIRE PREVENTION DISTRICT.

The following is a list of the cities and towns included in the Metropolitan Fire Prevention District, with the population according to the census of 1915:—

<i>Cities.</i>	
Boston,	745,439
Cambridge,	108,822
Chelsea,	43,426
Everett,	37,718
Lynn,	95,803
Malden,	48,907
Medford,	30,509
Melrose,	16,880
Newton,	43,113
Quincy,	40,674
Revere,	25,178
Somerville,	86,854
Waltham,	30,154
Woburn,	16,410
	1,369,887
<i>Towns.</i>	
Arlington,	14,889
Belmont,	8,081
Brookline,	33,490
Lexington,	5,538
Milton,	8,600
Reading,	6,805
Rockland,	7,074
Saugus,	10,226
Stoneham,	7,489
Watertown,	16,515
Williamstown,	3,981
Wilmington,	2,330
Winchester,	10,005
Winthrop,	12,758
	147,781
Total population,	1,517,668

APPENDIX II.

MEMBERS OF THE FIRE PREVENTION DEPARTMENT IN THE METROPOLITAN DISTRICT.

Fire Prevention Department for the Metropolitan District.

Commissioner, Frank Lewis.
 Deputy Commissioner, Michael A. Murphy.
 Secretary, Everett W. Shumway.

Heads of Fire Departments in the Metropolitan District.

CITY OR TOWN.	Head of Fire Department.	Central Fire Station.
Arlington,	Chief Walter H. Peirce,	1003 Massachusetts Ave.
Belmont,	Chief John F. Leonard,	Leonard St.
Boston,	Commissioner John R. Murphy, . .	40 Bristol St.
	Chief Peter E. Walsh,	Mason St.
	Deputy Chief of 1st Division John O. Taber.	Fort Hill Sq.
	Deputy Chief of 2d Division Daniel F. Sennott.	Winslow and Dudley sts., Roxbury.
	Deputy Chief of 3d Division Henry A. Fox.	Warren Ave.
District 1,	F. A. Sweeney,	Paris St., East Boston.
District 2,	Wm. E. Riley,	Main St., Charlestown.
District 3,	Capt. J. J. Kane (Acting),	Pittsburgh St., South Boston.
District 4,	Edw. J. Shallow,	Bulfinch St.
District 5,	Albert J. Caulfield,	Mason St.
District 6,	Francis J. Jordan,	Dorchester St., South Boston.
District 7,	Capt. J. J. Lally (Acting),	Warren Ave.
District 8,	Wm. J. Gaffey,	Tremont St., Roxbury.
District 9,	Joseph H. Kenney,	Dudley St., Roxbury.
District 10,	Walter M. McLean,	Harvard St., Dorchester.
District 11,	Capt. G. H. Nichols (Acting),	Harvard Ave., Allston.
District 12,	Michael T. Mulligan,	Centre St., Jamaica Plain.
District 13,	Michael J. Kennedy,	Cor. Washington and Poplar sts., Roslindale.
District 14,	A. J. McDonald,	Peabody Sq., Dorchester.
District 15,	Joseph A. Dolan,	Cor. Harvard Ave. and Winthrop St., Hyde Park.

Heads of Fire Departments in the Metropolitan District — Concluded.

CITY OR TOWN.	Head of Fire Department.	Central Fire Station.
Brookline,	Commissioner W. W. Estabrook, .	340 Washington St.
	Chief George H. Johnson, . . .	340 Washington St.
Cambridge,	Chief James M. Casey,	Inman Sq.
Chelsea,	Chief David M. Hudson,	307 Chestnut St.
Everett,	Chief Joseph T. Swan,	Broadway.
Lexington,	Chief Edward W. Taylor,	5 Main St.
Lynn,	Chief Edward E. Chase,	Broad St.
Malden,	Commissioner John H. Hannan, .	Mountain Ave.
	Chief John T. Nicholls,	388 Main St.
Medford,	Chief Thomas A. Qualey,	1 South St.
Melrose,	Chief Joseph Edwards,	576 Main St.
Milton,	Chief J. Harry Holmes,	Danton Ave.
Newton,	Chief W. B. Randlett,	27 Willow St.
Quincy,	Chief Alfred L. Meade,	Quincy Ave.
Reading,	Chief O. O. Ordway,	11 Pleasant St.
Revere,	Chief A. L. Kimball,	Broadway.
Rockland,	Chief Fred Chapman,	Union St.
Saugus,	Chief George W. Atkinson,	Woodbury Ave.
Somerville,	Chief Sewall M. Rich,	261 Medford St.
Stoneham,	Chief A. J. Smith,	1 Tidd St.
Waltham,	Chief George L. Johnson,	Moody St.
Watertown,	Chief John W. O'Hearn,	99 Main St.
Williamstown,	Chief A. Remillard,	Waters St.
Wilmington,	Chief E. L. Day,	Church St.
Winchester,	Chief David H. DeCourcy,	Mt. Vernon St.
Winthrop,	Chief J. B. Tewksbury,	31 Pauline St.
Woburn,	Chief Frank E. Tracy,	Winn St.

APPENDIX III.

BUILDING COMMISSIONERS AND INSPECTORS IN THE METROPOLITAN DISTRICT.

Arlington,	William Gratto.
Belmont,	James R. Logan.
Boston,	Commissioner Herbert A. Wilson.
Brookline,	Commissioner E. Lyon.
Cambridge,	Jeremiah Downey.
Chelsea,	James C. Denning.
Everett,	George H. Wood.
Lexington,	William Gratto.
Lynn,	Dennis J. Dinneen.
Malden,	C. George W. Bagge.
Medford,	Frank B. Blodgett.
Melrose,	William S. Allen.
Milton,	G. E. Burt.
Newton,	Commissioner Walter R. Forbush.
Quincy,	Warren S. Parker.
Reading,	George Sidebottom.
Revere,	William H. Graham.
Somerville,	Commissioner George L. Dudley.
Stoneham,	Albert L. Smith.
Waltham,	Arthur L. Cole.
Watertown,	William H. Wilson.
Winchester,	Maurice Dineen.
Winthrop,	F. L. Hodges.
Woburn,	Henry Macksey.

APPENDIX IV.

NUMBER OF FIRES FOR YEARS 1909 TO 1918, INCLUSIVE, MASSACHUSETTS (NOT INCLUDING BOSTON) AND BOSTON.

[Statistics on fires compiled from the reports of the Massachusetts District Police. "S." signifies State, exclusive of Boston; "B." signifies Boston.]

CAUSE.	1909.	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.	1918.	Total.	Average.	Per Cent.
Boiling over of fat, tar, varnish, etc.,	S.	33	33	56	38	51	53	37	49	34	415	41	58
Burning soot,	B.	12	18	17	21	25	16	17	14	11	173	17	24
.	S.	84	60	68	64	102	92	57	53	47	673	67	95
.	B.	19	12	16	22	26	25	17	22	17	183	18	26
Careless fumigation,	S.	2	5	7	2	6	6	2	3	2	40	4	6
.	B.	1	-	-	2	3	2	2	1	1	12	1	2
Careless smoking,	S.	339	374	469	532	661	687	573	556	577	5,118	512	7.22
.	B.	159	259	231	212	259	278	217	295	270	2,324	232	3.28
Careless use of matches,	S.	264	247	312	416	419	467	449	432	388	3,757	376	5.28
.	B.	401	333	443	455	477	390	282	272	267	3,838	384	5.40
Children and matches,	S.	312	372	325	422	363	427	326	336	367	3,590	359	5.05
.	B.	121	168	223	197	180	160	129	123	135	1,584	158	2.23
Defective chimneys,	S.	257	258	250	256	384	330	320	339	309	2,978	298	4.19
.	B.	64	47	61	34	53	50	39	29	53	474	47	6.7
Defective construction,	S.	3	5	3	5	3	6	27	7	4	69	7	1.0
.	B.	1	1	-	-	1	4	1	1	1	19	2	.03
Defective heating apparatus,	S.	35	47	85	49	42	74	70	51	43	536	54	7.5
.	B.	15	10	14	21	10	21	7	19	28	144	14	2.0
Electrical,	S.	53	48	66	88	164	146	144	155	190	1,114	111	1.57
.	B.	32	27	33	42	52	40	53	75	51	433	43	.61
Escaping gas ignited,	S.	25	22	23	35	29	29	26	38	20	296	30	.42
.	B.	38	31	22	11	29	12	11	8	3	129	13	1.8
Explosion of lamp, lantern, or stove,	S.	132	111	98	61	101	76	82	79	69	939	94	1.32
.	B.	71	49	35	28	24	23	27	31	27	366	37	.51
Firecrackers,	S.	-	-	52	88	18	15	-	11	4	220	22	.31
.	B.	-	19	21	40	15	8	13	14	5	135	13	.19

NUMBER OF FIRES FOR YEARS 1909 TO 1918, INCLUSIVE, MASSACHUSETTS (NOT INCLUDING BOSTON) AND BOSTON
— Concluded.

CAUSE.	1909.	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.	1918.	Total.	Aver- age.	Per Cent.
Fireworks,	86	71	42	45	36	28	11	23	26	31	399	40	.56
Foreign substances in stock,	45	20	13	12	2	8	3	5	5	5	116	12	.16
Friction,	43	31	42	32	41	51	29	29	23	22	343	34	.48
Gasoline or volatile oils, ignition of,	36	33	19	43	3	37	23	73	72	46	424	42	.59
Hot ashes in wooden receptacles,	87	104	119	171	176	204	169	159	185	153	1,504	150	2.12
Incendiary,	37	29	36	38	68	72	71	78	101	68	691	69	.95
Lamp, lantern or stove taking fire, upset or broken,	71	91	94	104	94	144	105	135	101	111	1,053	105	1.48
Lighting fire with kerosene or gasoline,	34	24	44	39	38	33	47	33	40	35	397	37	.53
Lightning,	135	111	102	126	137	126	146	124	110	65	1,192	119	1.68
Malicious mischief,	16	9	8	20	3	17	29	21	16	12	151	15	.21
Material ignited by gas jet, lamp, stove, etc.,	221	162	206	203	196	185	173	96	200	217	1,859	186	2.62
Mechanics' torches,	77	55	65	60	45	49	70	52	43	38	654	65	.90
Miscellaneous,	3	3	—	3	2	—	—	5	3	5	68	7	.10
Overheated cooking or heating apparatus,	8	42	156	78	110	66	—	80	143	1	851	85	1.19
Rats and matches,	4	1	1	5	10	3	—	3	13	9	49	5	.07
Sparks from bonfires, brush or forest,	37	30	41	60	41	65	54	27	41	52	448	45	.63
etc.,	22	10	34	37	11	35	25	15	9	21	219	22	.31
Material ignited by gas jet, lamp, stove, etc.,	241	281	272	311	288	366	338	373	289	239	3,057	306	4.30
Mechanics' torches,	174	171	181	206	188	188	152	133	127	121	1,633	163	2.29
Miscellaneous,	22	11	13	8	35	32	30	12	20	15	198	20	.28
Overheated cooking or heating apparatus,	5	8	4	15	10	19	8	9	11	9	75	7	.11
Rats and matches,	38	24	65	68	88	119	127	64	74	106	773	77	1.09
Sparks from bonfires, brush or forest,	13	11	22	24	28	40	30	29	25	24	247	25	.35
etc.,	183	216	232	271	249	364	295	328	345	340	2,833	283	3.99
Material ignited by gas jet, lamp, stove, etc.,	68	71	77	90	77	101	111	82	131	106	875	87	1.23
Mechanics' torches,	126	137	149	150	145	165	107	81	77	68	1,230	123	1.73
Miscellaneous,	78	81	80	111	72	83	49	44	33	26	706	71	.99
Overheated cooking or heating apparatus,	67	72	115	60	52	63	144	38	88	156	855	85	1.20
Sparks from bonfires, brush or forest,	6	13	17	6	11	7	23	3	13	10	109	11	.15

Sparks from chimney,	S.	204	182	224	268	204	239	262	285	219	241	2,278	228	3.20
Sparks from firebox in boiler room,	B.	37	38	66	74	59	54	66	54	55	38	541	54	.76
Sparks from forges, heaters, fireplaces, etc.,	B.	23	18	15	9	9	18	9	10	10	8	129	13	.18
Sparks from locomotives,	S.	4	5	-	-	4	1	-	3	8	1	26	3	.04
Sparks from matches,	B.	108	101	123	93	109	117	101	125	94	89	1,060	106	1.49
Spontaneous combustion,	B.	43	33	30	46	26	31	25	39	32	36	341	34	.48
Thawing water pipes,	B.	95	88	85	64	85	57	70	43	53	65	675	67	.95
Trampe,	B.	17	11	9	18	8	12	9	7	9	14	114	11	.16
Unknown,	B.	96	100	144	111	87	131	104	102	83	65	1,023	102	1.44
Separate totals,	S.	213	226	200	245	259	325	326	331	306	233	2,664	266	.02
Grand total,	B.	59	81	91	93	84	92	120	98	77	63	858	86	3.75
Exposure,	B.	34	58	31	164	36	183	19	71	142	187	905	90	1.21
	B.	10	24	12	53	17	56	6	36	63	64	341	34	.48
	B.	14	21	16	10	25	34	34	19	20	17	210	21	.30
	B.	-	-	-	1	-	1	-	-	-	1	3	-	-
	B.	459	489	521	488	527	655	617	540	446	375	5,117	512	7.22
	B.	182	112	199	231	257	289	351	267	241	185	2,294	229	3.24
Separate totals,	S.	4,221	4,746	4,746	5,055	5,149	6,128	5,801	5,249	5,257	5,054	80,888	5,089	71.60
Grand total,	B.	1,708	2,008	2,008	2,376	2,096	2,301	2,229	1,845	1,936	1,760	20,136	2,014	28.40
Exposure,	B.	6,099	6,764	6,764	7,430	7,245	8,429	8,080	7,101	7,183	6,314	71,024	7,102	100.00
	B.	435	408	408	558	686	2,666	531	495	354	453	6,991	-	-

APPENDIX V.

AVERAGE FOR YEARS 1907 TO 1918, INCLUSIVE, MASSACHUSETTS (NOT INCLUDING BOSTON) AND BOSTON.

[Statistics on fires compiled from the reports of the Massachusetts District Police. "S" signifies State, exclusive of Boston; "B" signifies Boston.]

OCCUPANCY.	TOTAL.		AVERAGE PER YEAR.		PER CENT.		AVERAGE PER FIRE.		Total Fires (Number).	Average Fires (Number).
	Buildings.	Contents.	Buildings.	Contents.	Buildings.	Contents.	Buildings.	Contents.		
Automobiles,	\$246,600	\$148,100	\$20,500	\$12,300	.38	.22	\$280	\$170	885	74
Bakeries,	15,200	103,000	1,300	8,600	.02	.16	40	240	425	35
Banks,	264,100	157,400	22,000	13,100	.40	.24	750	440	354	30
Barber shops,	43,800	48,600	3,600	4,000	.07	.07	390	430	112	9
Barns and stables,	107,300	81,600	8,900	6,800	.16	.12	1,140	870	94	8
Blacksmiths,	16,500	38,400	1,400	3,200	.02	.06	310	710	54	4
Board and lodging,	79,100	53,300	6,600	4,400	.12	.08	350	230	228	19
Bridges, docks and wharves,	40,700	32,100	3,400	2,700	.06	.05	250	190	165	14
Buildings under construction and unoccupied,	4,470,900	2,440,800	372,600	203,400	6.94	3.68	1,100	800	4,032	338
Candy manufacturing,	482,600	435,200	40,200	36,300	.74	.66	960	860	507	42
Carpenter shops,	51,600	38,900	4,800	3,100	.09	.07	230	180	251	21
Churches,	292,200	99,000	24,300	8,200	.44	.15	690	490	75	6
	143,800	95,800	12,000	8,000	.22	.14	150	100	646	54
	109,400	2,500	9,100	200	.16	—	3,040	70	36	3
	55,700	2,300	4,600	200	.08	—	1,240	50	45	4
	286,400	17,700	22,200	1,500	.41	.03	1,090	70	244	20
	203,300	21,200	16,900	1,800	.31	.03	2,480	260	82	7
	89,700	127,800	7,500	10,600	.14	.19	700	990	129	11
	62,400	123,300	5,200	10,300	.09	.19	1,140	2,240	55	5
	49,700	42,200	4,100	2,500	.07	.06	590	500	84	7
	35,600	36,200	3,000	3,000	.05	.05	450	450	79	7
	1,467,500	252,300	122,300	21,000	2.25	.37	6,190	1,070	237	20
	240,300	49,100	20,000	4,100	.37	.07	3,390	690	71	6

Cigars and tobacco,	S. 33,100	85,400	2,800	7,100	.05	.13	370	930	90	7
Clothing and furnishings,	S. 19,100	38,100	1,600	8,200	.03	.06	240	480	80	24
Clubs and lodges,	S. 275,500	896,900	23,000	74,700	.42	1.35	970	2,160	284	11
Coal and wood yards,	S. 78,300	346,100	6,500	28,800	.12	.62	580	3,560	136	31
Cotton mills,	S. 660,000	281,500	55,000	23,500	1.01	.43	1,780	760	371	13
Drug stores,	S. 267,800	59,800	22,800	6,000	.41	.09	397	1,770	161	77
Dry cleaning and dyeing,	S. 220,000	110,600	18,300	9,200	.33	.17	1,720	860	128	4
Dry and fancy goods,	S. 170,400	67,200	14,200	5,600	.28	.10	3,710	1,460	46	17
Dwellings,	S. 453,700	644,900	37,800	53,700	.69	.97	490	700	928	30
Factories, unclassified,	S. 1,700	15,300	1,300	1,300	—	.02	240	220	7	1
Foundries,	S. 142,100	285,300	11,800	23,800	.22	.43	690	1,390	205	9
Fruit,	S. 40,100	104,400	3,300	8,700	.06	.16	370	980	107	5
Furniture,	S. 72,800	136,800	6,000	11,400	.11	.21	1,280	2,320	59	2
Gas houses,	S. 33,000	45,400	2,700	3,800	.05	.07	1,500	2,060	22	19
Greenhouses,	S. 511,200	1,414,400	42,600	117,900	.78	2.13	1,430	3,960	357	3
Grocery stores,	S. 197,800	595,000	16,400	49,600	.30	.90	860	2,580	220	138
Halls,	S. 17,882,600	12,909,900	1,490,200	1,075,800	27.35	19.49	540	380	32,971	2,748
Hardware,	S. 2,905,200	1,472,400	242,100	122,700	4.44	2.22	220	110	13,170	1,097
Henneries,	S. 4,171,600	5,357,500	347,600	446,500	6.38	8.09	2,510	3,230	1,661	53
Hospitals,	S. 1,066,000	2,660,700	88,800	221,700	1.63	4.01	1,670	4,170	638	16
Hotels,	S. 224,200	196,300	18,700	16,400	.84	.80	1,170	1,020	192	6
	S. 147,900	310,400	12,300	25,900	.23	.47	1,970	4,130	75	20
	S. 90,000	98,700	7,500	8,200	.14	.15	370	410	242	11
	S. 42,100	39,400	3,500	3,300	.06	.08	1,910	310	129	14
	S. 315,200	480,700	28,300	40,100	.48	.73	580	2,920	165	7
	S. 44,200	179,800	3,700	15,000	.07	.27	660	2,140	84	55
	S. 873,700	823,000	31,100	68,600	.57	1.24	1,820	1,240	963	13
	S. 288,100	1,006,300	23,800	83,900	.44	1.52	1,580	6,410	137	3
	S. 66,800	31,500	4,700	2,600	.09	.05	200	1,020	31	6
	S. 36,900	21,700	3,100	1,800	.06	.03	380	310	69	1
	S. 4,300	2,000	400	200	.01	—	350	170	12	85
	S. 438,200	683,500	36,500	57,000	.67	1.03	450	970	1,017	56
	S. 212,200	604,600	42,000	42,000	.32	.76	780	780	672	8
	S. 206,500	107,200	17,200	8,900	.23	.10	2,010	1,890	99	2
	S. 276,900	23,100	23,000	2,300	.43	.04	1,570	3,640	76	6
	S. 115,800	291,800	9,600	19,200	.18	.38	2,370	8,000	46	6
	S. 163,400	613,600	13,600	51,100	.25	.63	2,370	8,000	273	23
	S. 44,800	19,500	3,700	1,900	.07	.03	100	70	41	3
	S. 4,000	3,100	300	1,300	.01	.01	600	310	61	2
	S. 42,800	19,000	1,200	1,200	.03	.03	490	70	21	3
	S. 14,500	2,300	1,200	43,000	.24	.78	3,300	1,110	463	39
	S. 1,527,200	515,400	127,300	43,000	2.34	.94	1,370	730	220	18
	S. 1,301,000	160,700	25,100	13,400	.46	.24	1,370	730	220	18

AVERAGE FOR YEARS 1907 TO 1918, INCLUSIVE, MASSACHUSETTS (NOT INCLUDING BOSTON) AND BOSTON — Concluded.

OCCUPANCY.	TOTAL.		AVERAGE PER YEAR.		PER CENT.		AVERAGE PER FIRE.		Total Fires (Number).	Average Fires (Number).
	Buildings.	Contents.	Buildings.	Contents.	Buildings.	Contents.	Buildings.	Contents.		
Ice houses,	\$714,300	\$361,200	\$59,500	\$30,100	1.09	.54	\$4,440	\$2,240	161	13
Jewelry stores,	38,500	90,100	3,200	7,500	.06	.14	840	1,960	46	4
Junk shops,	27,400	67,700	2,300	5,600	.08	.10	780	1,930	35	3
Junk shops,	98,600	97,200	8,200	8,100	.15	.15	920	910	107	9
Laundries,	26,200	22,400	2,200	1,900	.04	.03	430	360	63	5
Laundries,	166,100	311,700	13,800	26,000	.25	.47	770	1,460	214	18
Leather establishments,	118,600	185,400	9,900	16,300	.18	.29	1,280	2,110	93	8
Leather establishments,	1,396,200	1,465,900	116,300	123,300	2.14	2.24	7,320	7,780	191	16
Liquor stores,	102,800	425,100	8,600	35,400	.16	.64	1,900	7,680	54	4
Liquor stores,	42,500	52,500	3,500	4,400	.06	.08	290	360	146	12
Lumber yards,	228,100	328,500	19,000	27,400	.35	.50	960	1,390	238	20
Lumber yards,	326,800	592,200	27,200	49,300	.50	.89	3,060	5,640	107	9
Machine shops,	235,700	512,600	19,600	42,700	.36	.77	6,040	13,300	39	3
Machine shops,	617,200	523,200	51,400	43,600	.94	.79	2,620	2,220	236	20
Markets,	255,900	814,000	21,300	67,800	.39	1.23	3,460	11,000	74	6
Markets,	273,600	312,300	22,800	26,000	.42	.47	1,120	1,290	243	20
Millinery,	51,800	143,900	4,300	12,400	.08	.22	320	920	161	13
Millinery,	57,700	96,000	4,800	8,000	.09	.14	560	940	102	8
Office buildings,	24,200	89,400	2,000	7,400	.04	.13	440	1,620	55	5
Office buildings,	268,000	249,600	22,300	20,800	.41	.38	1,380	1,280	185	16
Paint and oil stores,	349,600	445,100	29,100	37,100	.63	.67	1,890	2,410	185	15
Paint and oil stores,	112,500	167,300	9,400	13,900	.17	.25	700	1,050	160	13
Paper mills and dealers,	170,700	307,900	14,200	25,700	.26	.47	1,820	3,280	94	8
Paper mills and dealers,	170,800	507,300	14,200	42,300	.26	.77	1,540	4,570	111	9
Periodicals and stationery,	6,100	29,500	500	2,500	.01	.04	360	1,740	17	1
Periodicals and stationery,	12,100	44,600	1,000	3,700	.02	.07	390	1,440	31	3
Photo studios,	4,800	9,600	400	800	.01	.02	130	260	37	3
Photo studios,	36,400	44,300	3,000	3,700	.05	.07	540	660	67	6
Physicians and dentists,	23,500	16,500	2,000	1,400	.04	.03	940	660	25	2
Physicians and dentists,	7,800	26,000	900	2,100	.01	.04	150	480	52	4
Plumbers,	10,800	9,800	900	800	.02	.02	280	280	38	3
Plumbers,	41,800	42,000	3,500	3,500	.06	.06	510	510	82	7
Plumbers,	12,000	9,800	1,000	800	.03	.02	380	270	36	3

Pool, billiards, bowling,	S.	91,300	86,500	7,600	7,200	.14	.13	700	660	130	11
Printing,	B.	41,000	28,800	3,400	2,400	.06	.04	950	4,690	43	4
Private schools and academies,	B.	202,400	532,100	16,900	44,300	.31	.80	1,760	3,170	115	10
Public buildings,	B.	1,174,100	249,100	10,600	30,700	.19	.54	1,120	2,560	97	8
Public schools,	B.	1,115,900	8,100	9,700	700	1.80	.37	12,100	1,380	254	21
Railroads,	B.	137,800	344,800	118,500	28,700	.18	.01	3,310	1,380	85	7
Restaurants,	B.	123,300	22,200	10,200	1,800	.19	.03	1,680	300	73	6
Sheds and outbuildings,	B.	386,100	46,900	30,500	3,900	.56	.07	4,310	550	85	1
Shoe factories,	B.	4,900	600	400	-	.01	-	1,220	40	14	36
Shoe stores,	B.	530,500	985,500	44,200	79,900	.81	1.45	1,680	2,200	435	11
Storehouses,	B.	776,300	1,153,700	64,700	96,100	1.19	1.74	6,020	8,960	129	3
Stores and dwellings,	B.	251,900	149,900	21,000	12,500	.38	.23	690	350	427	36
Summer cottages,	B.	227,000	235,900	19,900	19,700	.35	.36	530	560	374	31
Tailor shops,	B.	245,100	165,000	20,500	13,700	.38	.25	230	160	1,072	89
Theaters,	B.	91,600	86,900	7,600	7,200	.14	.13	240	220	374	32
Unclassified,	B.	614,200	1,351,500	51,200	112,600	.94	2.04	1,680	3,480	388	3
Woodworking with power,	B.	55,600	183,300	4,600	15,300	.08	.28	1,630	6,300	34	21
Woolen mills,	B.	183,800	393,400	12,800	30,300	.23	.55	620	2,550	254	14
Vessels,	B.	107,800	440,500	9,000	38,700	.16	.96	1,000	2,240	173	95
Separate total,	B.	1,141,700	2,539,400	96,100	213,300	1.75	3.87	1,060	2,460	1,145	46
Grand total,	B.	516,600	1,993,400	43,000	104,100	.79	3.01	970	3,600	664	56
	B.	657,400	450,100	84,800	35,800	1.01	.65	770	640	677	14
	B.	128,900	113,100	10,700	9,400	.20	.17	970	1,390	167	129
	B.	1,500,300	2,442,900	125,000	178,600	2.30	3.24	1,060	2,460	1,548	62
	B.	777,800	1,819,000	64,800	152,000	1.19	2.75	1,400	3,600	789	32
	B.	672,400	221,000	66,000	18,000	1.03	.33	1,400	2,460	387	7
	B.	128,700	183,100	10,600	15,300	.19	.28	360	510	356	30
	B.	285,100	367,500	23,800	30,600	.44	.55	960	1,260	291	24
	B.	438,000	123,700	36,500	10,300	.67	.19	3,920	1,100	112	9
	B.	112,000	22,900	8,300	1,900	.17	.03	3,600	1,140	20	2
	B.	1,127,000	734,700	93,900	61,200	1.72	1.11	1,240	810	905	75
	B.	328,000	497,400	27,400	41,400	.50	.75	2,780	2,510	673	56
	B.	770,500	694,700	64,200	57,900	1.18	1.05	2,780	2,510	277	23
	B.	128,000	163,400	10,700	13,600	.20	.32	3,640	1,970	83	7
	B.	488,700	344,100	41,600	23,700	.76	.25	3,000	2,070	166	14
	B.	43,500	286,500	3,900	24,700	.07	.45	9,000	69,300	8	7
	B.	67,000	8,100	5,400	6,400	.15	.10	3,400	800	81	7
	B.	267,100	157,000	22,300	15,600	.41	.28	3,520	2,460	76	6
Separate total,	B.	\$51,832,500	\$43,319,500	\$3,797,200	\$3,797,200	-	-	\$890	\$770	\$8,804	4,900
Grand total,	B.	13,572,900	20,690,500	1,131,100	1,724,200	100.00	100.00	360	860	24,019	2,002
	B.	\$95,406,500	\$68,267,000	\$5,450,600	\$5,521,400	100.00	100.00	\$790	\$800	\$2,823	6,902

